APRIL 1952

The Paper Industry

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for faster

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This Type "FSG" ROTARY UNION is the most rugged, compact steam joint for the heavy duty continuous service required in the paper industry. It was designed especially to give continuous trouble-free service at the high speeds, pressures, and temperatures met with on revolving paper mill equipment.

The unique construction of ROTARY UNIONS takes the stress and strain off its moving and sealing parts. Many mill engineers report that their ROTARY UNIONS have given them perfect sealing on dryers, calenders, and digesters for 3 years and more without requiring even the slightest tightening or adjusting.

Eliminate your maintenance, repair, and down-time headaches which are due to sealing troubles by installing Type "FSG" ROTARY UNIONS on all of your revolving equipment. Write Department 4P today for our new catalog which shows the Type "FSG" and also the other type ROTARY UNIONS which are available. Or call our nearest office for engineering service.

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Tech

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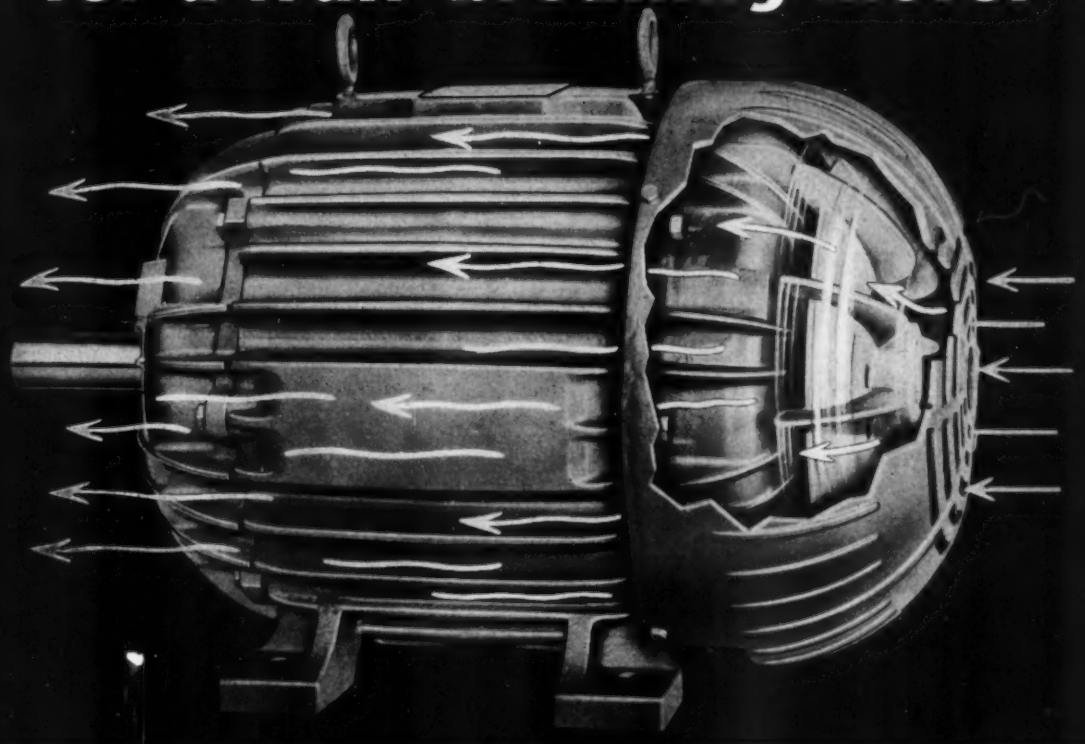
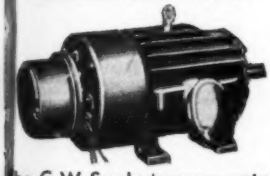
for a trail-breaking motor



THE ELLIOTT CROCKER-WHEELER *Sealedpower* MOTOR

SEALEDPOWER BRAKE MOTORS



The C-W Sealedpower motor is available equipped with the newly designed C-W brake, providing increased brake capacity without increased bulk.

The Elliott C-W Sealedpower motor is available also in explosion-proof construction. Bulletin SL-300-5 covers this type. Copy on request.

Crocker-Wheeler motors range from 1 to 200 hp. Larger Elliott motors and generators are built by the Ridgway Division in Ridgway, Pa.

TEN YEARS AGO the C-W "Sealedpower" motor, with its unique cooling and self-cleaning system, made its bow to American industry. Its immediate and continued popularity has put thousands into successful service.

Completely enclosed, there's no way for dirt, dust, moisture or fumes to get in. But there's an easy out for heat—by way of the 150% increased radiating surface of the many radial fins, plus the fan-driven air blast directed along and around the fins and frame. It cleans itself, too—the air blast gives dirt and dust the quick brush-off.

WAY AHEAD OF ITS TIME ten years ago, the C-W Sealedpower Motor with further refinements is still ahead, and is the ideal motor for any service within its capacity range. Write today for Sealedpower Bulletin. Address your request to Elliott Co., Dept. PI, Jeannette, Pa.

ELLIOTT COMPANY-*Crocker-Wheeler Division, Ampere, N. J.*

BRANCH OFFICES AND REPRESENTATIVES IN PRINCIPAL CITIES. CW-27

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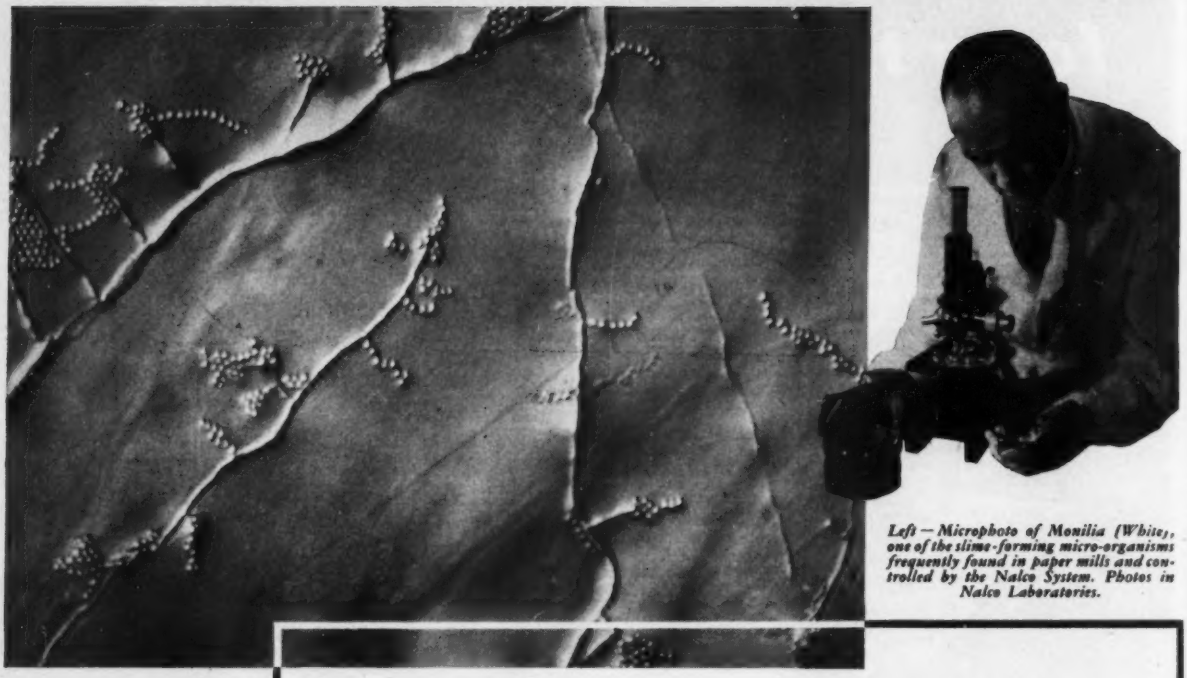

Left — Microphoto of Monilia (White), one of the slime-forming micro-organisms frequently found in paper mills and controlled by the Nalco System. Photos in Nalco Laboratories.

FORMULA FOR SUCCESSFUL SLIME CONTROL

SLIME control, like paper making itself, requires constant and careful attention to details. Here is a formula for successful slime control which will cut to a minimum, spots and specks, breaks, cleaning, and other costly problems due to slime:

- Identify slime-forming organisms to be controlled.

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- Determine the best types of treatment to be used.

A NALCO SERVICE

- Locate, by detailed survey, the proper points of application.

A NALCO SERVICE

- Provide consistent supervision to check application and effectiveness of treatment.

A NALCO SERVICE

- Maintenance of high standards of sanitation throughout the mill. (Even the best of treating and scientific control can be seriously hampered by unsanitary conditions.)

Nalco Field Representatives and the modern, scientific facilities of the Nalco Laboratories are at your service to put this formula for successful slime control into practical operation in your mill. Write for details today.

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The Paper Industry

Technology • Engineering • Management • Production

VOLUME 34 • NUMBER 1 • APRIL, 1952

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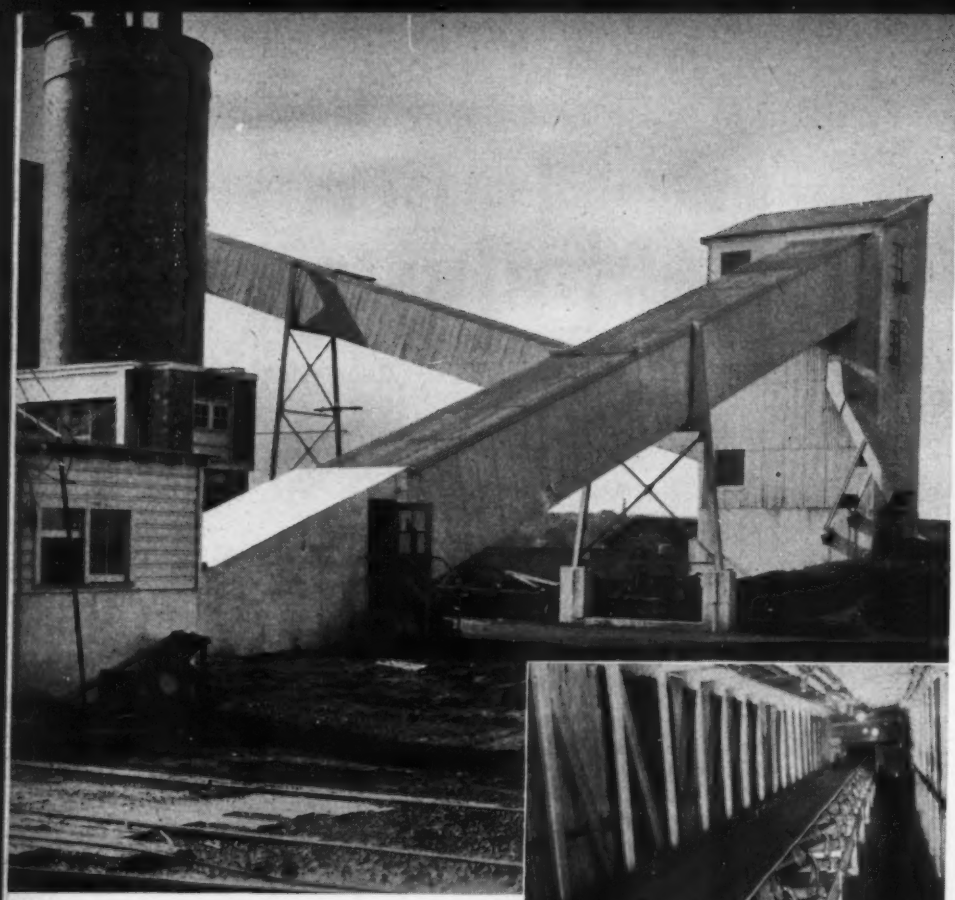

Starts fast at forty below...

This belt conveyor carries coal from railroad cars to overhead hoppers for a power company located in the northern part of the Midwest . . . so far north that temperatures frequently hit forty below zero. Starting the conveyor in that kind of weather meant lost time, wasted manpower. The bearing lubricant became so stiff that five or six men often were required to pull on the belt. Three hours a day frequently were lost in getting the unit in operation.

As many as a dozen conventional lubricants were tried without success before a change to STANOLITH Grease No. 42 was made on the recommendation of a Standard Oil lubrication specialist. None could match the ability of STANOLITH to provide easy starting at extreme low temperatures, and still maintain effective lubrication during high summer temperatures.

STANOLITH Greases are filling the bill in a wide range of industrial and processing applications because of their resistance to heat and to the washing action of water, and their ability to flow readily under wide variations in temperature. A Standard Oil lubrication specialist can help you take advantage of these special properties. A call to your local Standard Oil Company office is all that's necessary. Or write: Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

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What's your problem?

Meet R. R. Rowlands, of Standard's La Crosse office. He is the lubrication specialist who worked with this power company to find the right grease for an especially tough job. And as a result of his work, the company was able to save considerable time in the operation of a coal conveyor.

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Why not call your local Standard Oil Company office today? Put a lubrication specialist to work on your problem now. When he calls, be sure to discuss the advantages and performance records of these outstanding products:

STANOIL Industrial Oils—This multi-purpose line of oils provides cleaner operation of hydraulic units, supplies effective lubrication in air compressors, gear cases, and circulating systems. One or two grades can replace a wide variety of special oils and lubricants.

CALUMET Viscous Lubricants—These greases strongly resist washing and throw-off. Their superior wetting ability affords better coating of open gears and chains, better internal lubrication of wire ropes.

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Impco POINTS TO A

Now you can keep your black liquor evaporators FREE from this fibrous deposit!

Photographs of actual encrustation of evaporator tubes formed before Waco Filter was installed.

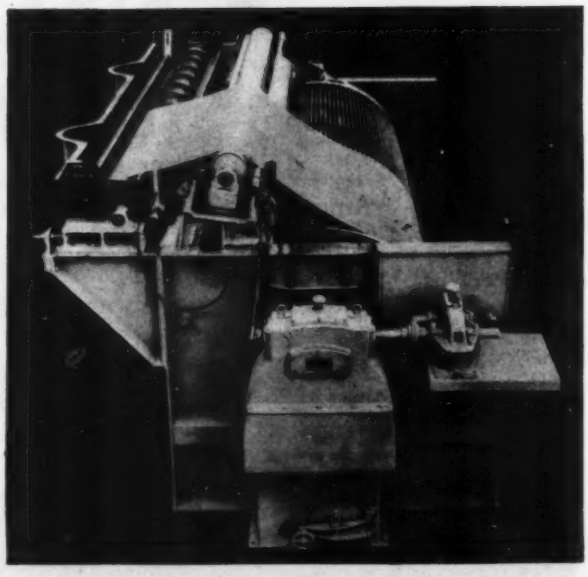
Up to 95% "fines" recovered before evaporation!

The Waco Filter forms its own continuous filter paper through which liquid is filtered for removal of solids. Contaminated filter paper is simultaneously removed.

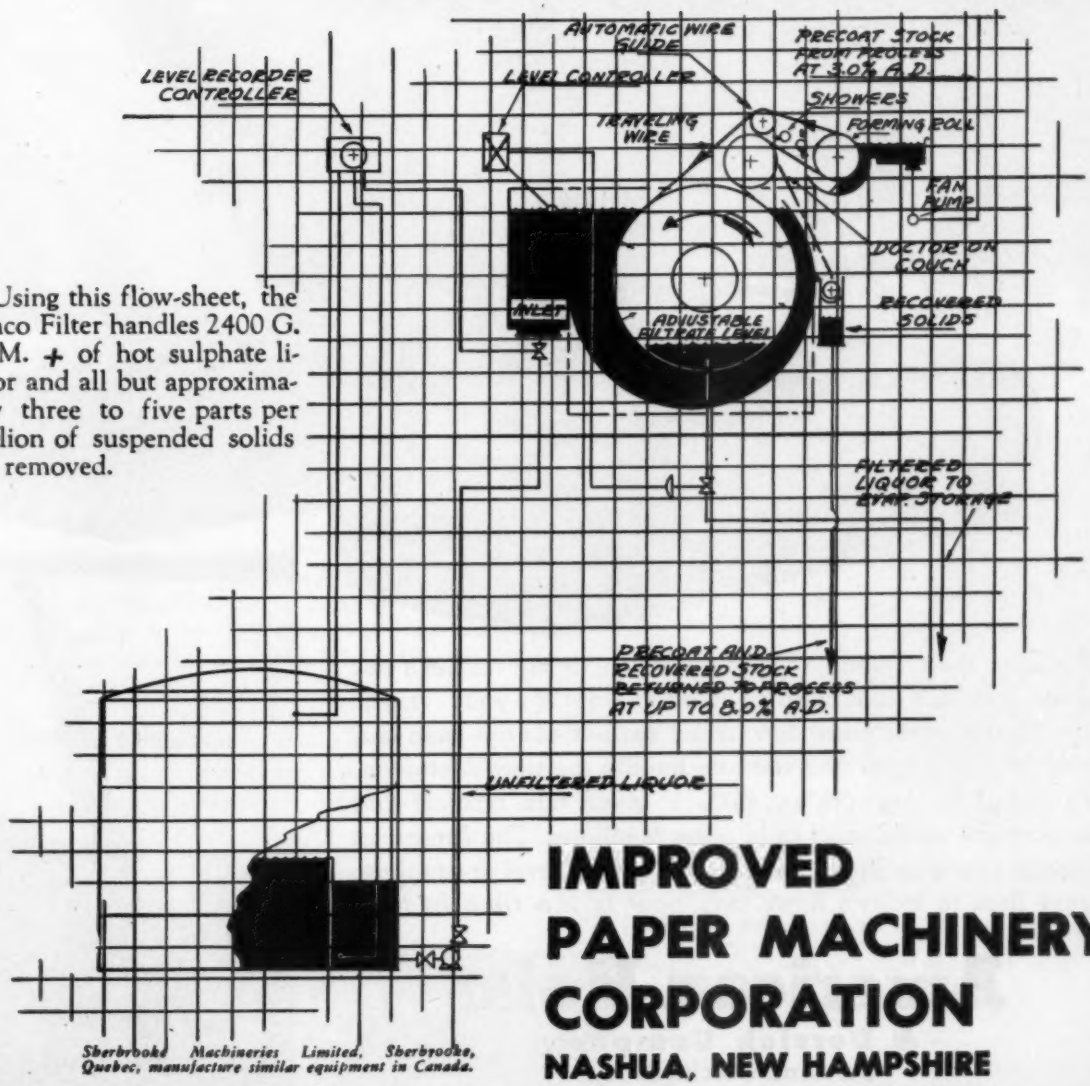
Stock consumption is negligible.

Filtering black liquor is just one job it does well.

Consult us about filtering fresh-water, white water, mill effluents—all mechanical filtration jobs.



D ANOTHER WACO FILTER APPLICATION



Using this flow-sheet, the Waco Filter handles 2400 G. P. M. + of hot sulphate liquor and all but approximately three to five parts per million of suspended solids are removed.

Sherbrooke Machineries Limited, Sherbrooke, Quebec, manufacture similar equipment in Canada.

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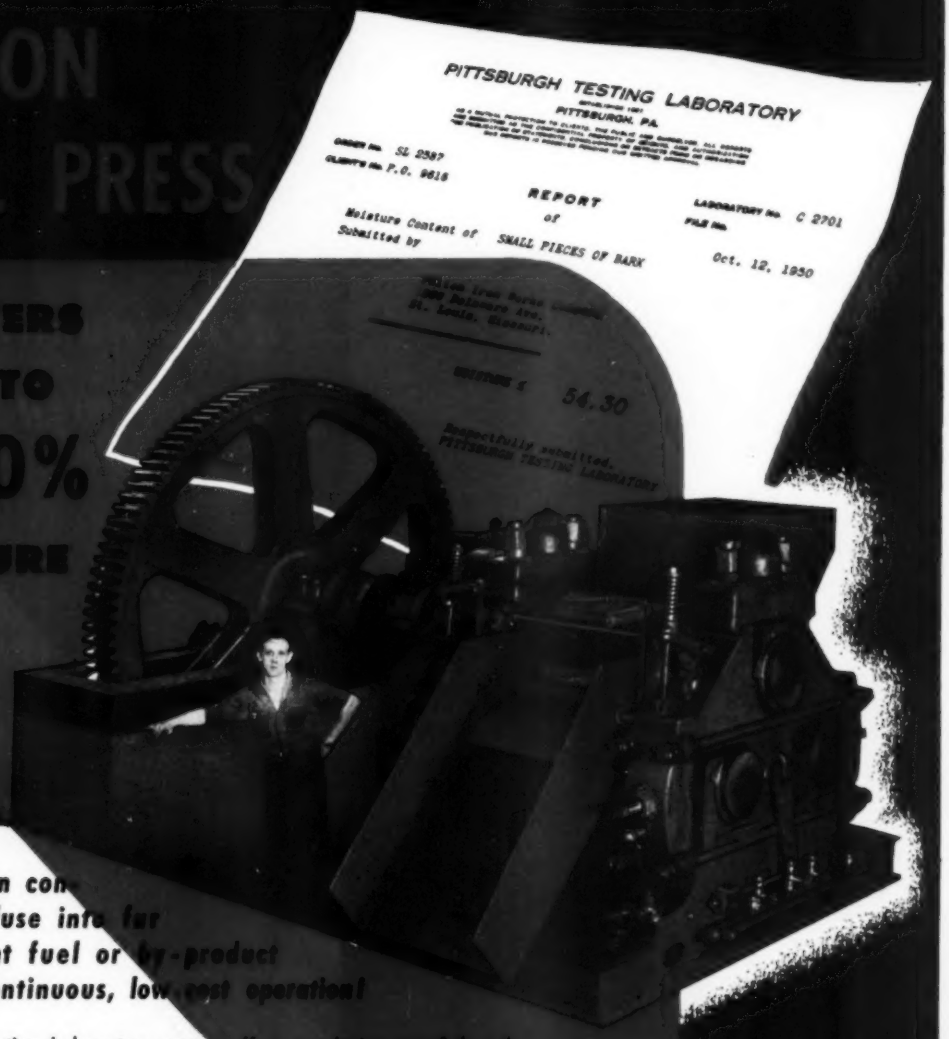

NOW you can convert mill refuse into far more efficient fuel or by-product . . . in one continuous, low-cost operation!

This Pittsburgh Testing Laboratory report offers conclusive proof that the FULTON ROLL PRESS opens new profit possibilities never before available to the pulp and paper industry . . . because never before could you get a single unit that approached the FULTON ROLL PRESS in versatility and efficiency. This remarkable machine, perfected by the world's leading builder of cane milling equipment after 99 years of experience,

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The Wrenn Paper Company, widely recognized for its high quality products, was faced with the problem of slitting a hard-to-handle material. Clean, square edges and uniformly wound rolls were of utmost importance.

After considering several machines, the Bagley & Sewall #15 Shear-Cut Slitter-Rewinder was selected.

B & S Slitters and Rewinders are doing outstanding jobs in mills and converting plants all over the country. Their many unique money-saving advantages make them the first choice of the industry. Before you buy, *compare*...and your choice, too, will be B & S Slitting and Rewinding equipment.

For full details write to The Bagley & Sewall Company, Watertown, New York.

Inserts show Shear-Cut Slitter Units

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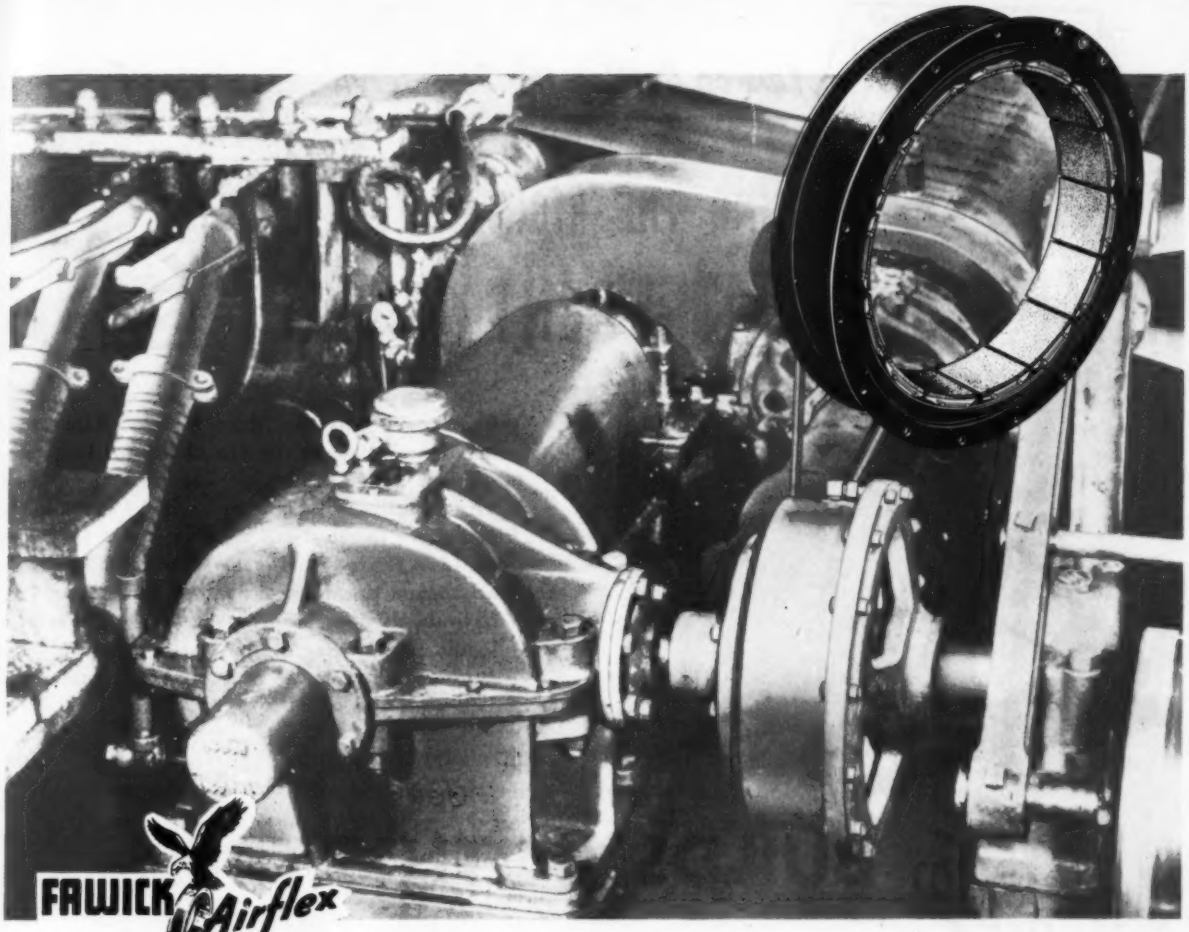

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The sensitive and shock-free performance of FAWICK AIRFLEX CLUTCHES on sectional drives contributes vitally to efficient manufacture of paper and paper products.

The simplified compact FAWICK design and rugged construction provide all operating advantages for top-efficiency drive performance.

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FAWICK CLUTCHES PROVIDE YOU WITH

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•

CUSHIONED, DEPENDABLE ACTION

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SELF-ADJUSTMENT

•

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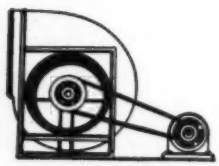
For further information on Fawick Industrial Clutch and Brake Units, write to the Main Office, Cleveland, Ohio, for Bulletin ML-22.

"Buffalo" *Tips on Getting the Best Service from your* **Fans**

MAKING THE RIGHT SELECTION

AXIAL FLOW? or CENTRIFUGAL?



Centrifugal fans like this "Buffalo" Limit-Load model are generally the first choice for large ventilation, exhaust and air conditioning systems. Their efficiency is high even when installation is at a curve in the duct. Medium speed fans, they are ideal for handling large volumes of air quietly at medium pressures. "Buffalo" Limit-Load Fans have the additional advantage of being non-overloading, regardless of the system pressure. For further factors in the selection of a centrifugal fan, write for Bulletin 3737.

"Buffalo" BUILDS BOTH TYPES—

Axial Flows, on the other hand, move air by the propeller principle, straight through the fan housing. These fans will thus be most efficient mounted in straight runs of duct. They are ideal for light-duty ventilation and air conditioning service at pressures to around 2". Axial Flows are higher velocity fans than centrifugals, are lighter weight and more compact than centrifugal fans, therefore lower cost for cut-mounting on ceilings, walls, etc. However, the performance curve is often the last analysis in your choice of fan for each job. "Buffalo" Bulletin 3533-C contains a comparison performance chart of both "Buffalo" Limit-Load Fans and Axial Flows. A copy will be mailed to you on request.

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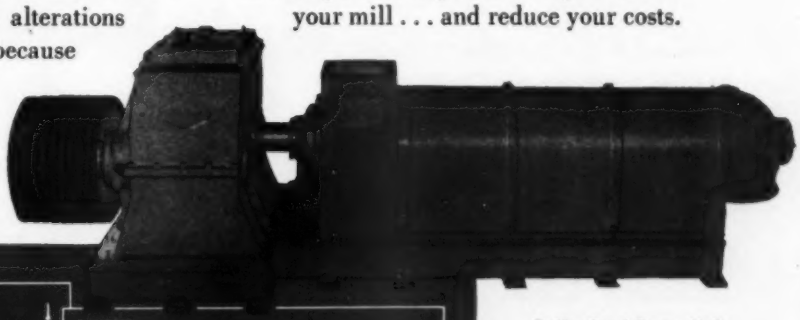
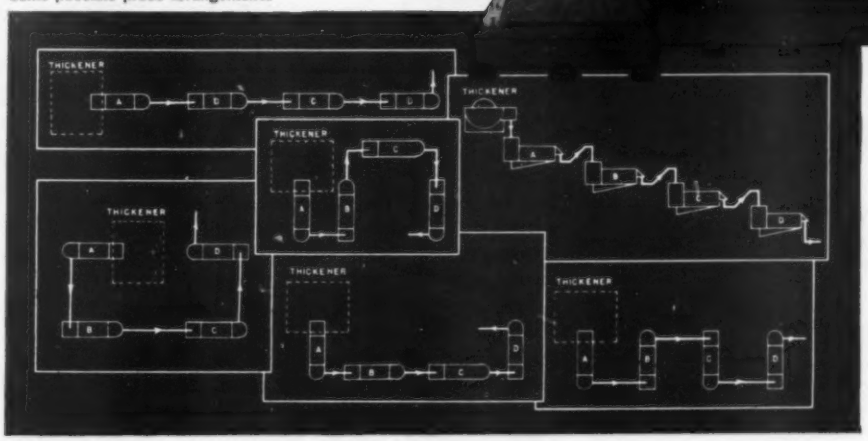
A 300-ton Pressure Washing System requires less than 200 g.p.m. of wash water. This not only makes it desirable if your mill has a limited water supply, but also results in greatly reduced stream pollution. Further, since the water temperatures exceed 200°F. excellent blow-heat recovery is possible. Space is no problem, either, for the units are compact and can be installed with a minimum of building alterations (see diagram). Finally because filtrate volumes are small, large pumps and pipelines are unnecessary. Thus considerable power saving is effected, a typical 300-ton, 3-stage system consuming a total of only 1.36 horsepower-days per air-dry ton.

Get the facts on Pressure Washing today . . . we think you'll see how its unique advantages can improve the operation of your mill . . . and reduce your costs.



Sutherland Press Unit

Some possible press arrangements



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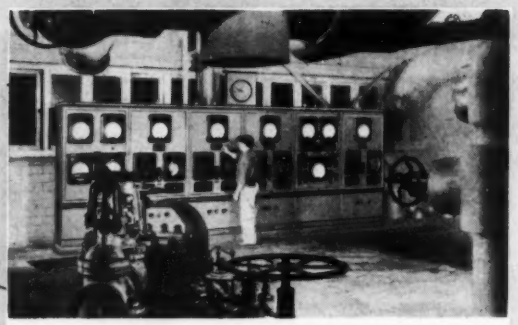

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If you install a valve that's not precisely suited to the service, it will not last.

But you can be right the first time with Powell Valves because they're designed to meet specific flow control conditions.

There are more *specifically adapted* Powell Valves in use today than any other make.

The Wm. Powell Company
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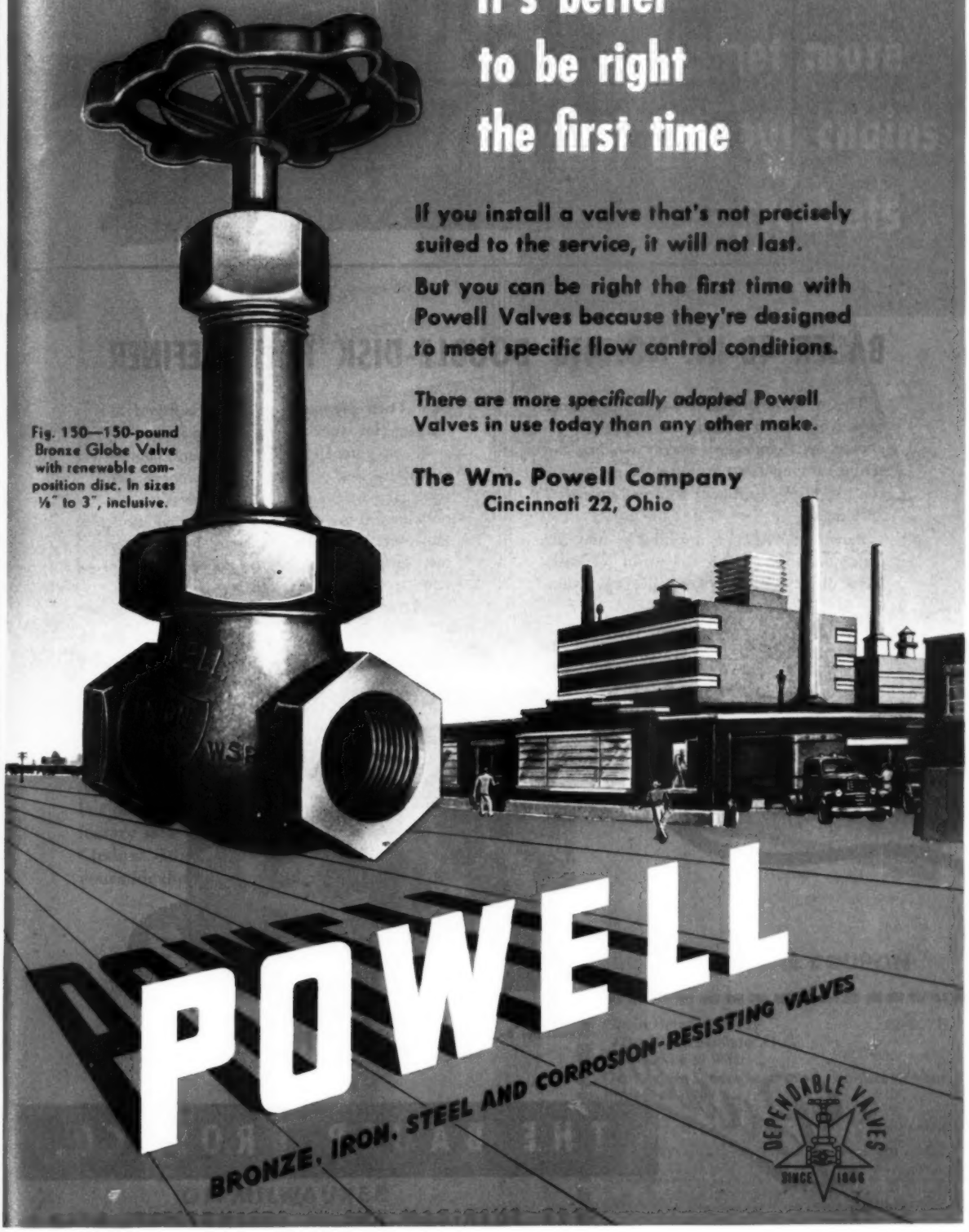

Fig. 150—150-pound Bronze Globe Valve with renewable composition disc. In sizes ⅛" to 3", inclusive.

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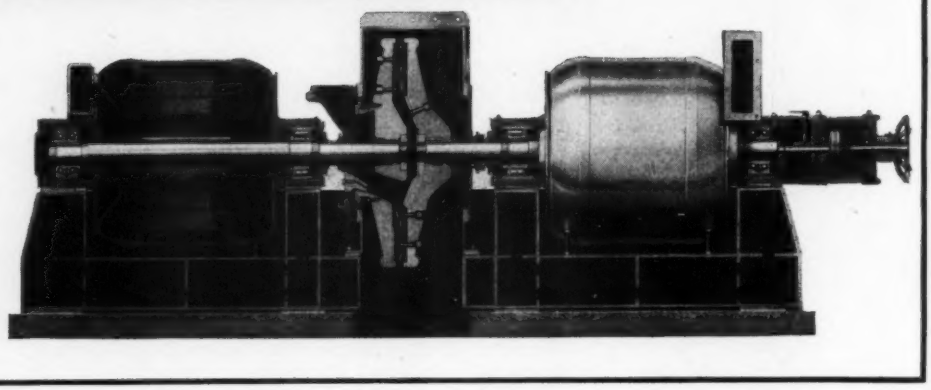

BAUER 40-IN. NO. 410 DOUBLE-DISK PULP REFINER

This is the largest double-disk pulp refiner now available. It is designed to use 600 hp effectively. Refining pressures and disk gap settings are regulated by finger-tip, pneumatic control. Disk adjustment is in increments of .001 in.

Bauer Pulp Refiners are used in pulp and paper mills throughout the world for fiberizing, dispersing, deflocking, and size reduction. Their preponderate usage is proof of the superior work they are doing.

To get complete information and data on the 400 series of Bauer Disk Refiners, ask for a copy of Bulletin P-2. A request for the bulletin will not expose you to a solicitation. However, if you desire information on your own specific problems, our sales engineer in your area will be glad to consult with you.

Write, wire, or phone.

272 BAUERS in use today on semi-chemical jobs alone

Four of the nine Bauer Refiners in a board mill where these machines do all the refining on semi-chemically cooked chips.

Bauer

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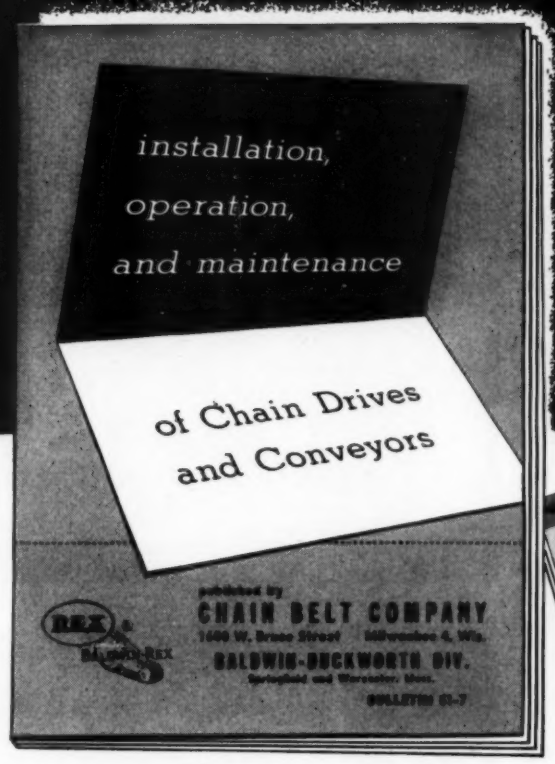
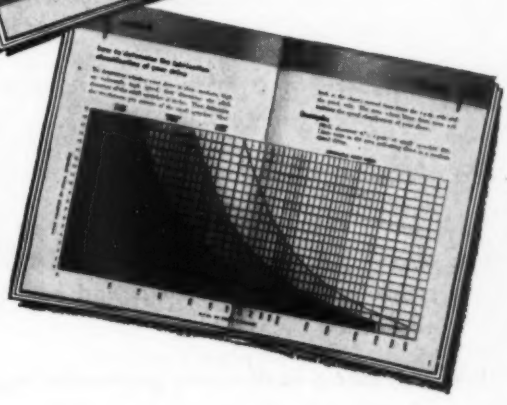
this book helps you get more from your chains and sprockets





Here's just what you're looking for to help you get longer life from your chain drives and conveyors. This new pocket-size handbook is packed with useful tips that are of real value.

There are chapters devoted to installation, lubrication, operation, repair and storage as well as a number of helpful sketches, charts and graphs. One novel feature is a detailed check chart on "Cures for Sick Chains." It's a book you'll want and keep, and it's yours for the asking. Send for your copy today.

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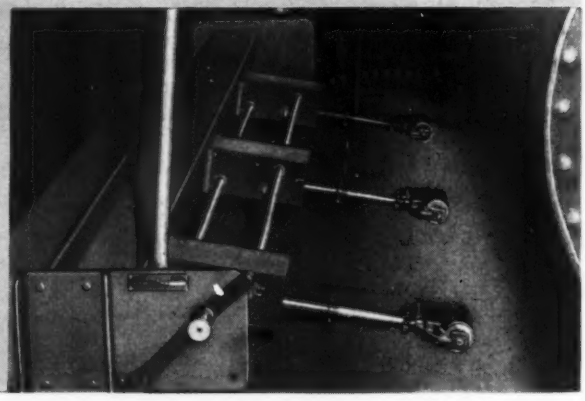
Baby-Sitter FOR BOXBOARD

HURLETRON
Automatic
CALIPER and WEIGHT CONTROL



- **Holds wet end fluctuations to plus or minus one point**
- **Measures thickness at 40″ intervals clear across the sheet**
- **Makes corrections by regulating flow of stock *but only when a trend has been established***
- **Provides a continuous, permanent record of wet end caliper**
- **Signals operator when a drift across the sheet is indicated**
- **Provides a continuous reading and record at the dry end**

WRITE FOR FREE BULLETIN

Interesting . . . informative . . . contains full details about Hurletron Control Equipment. Includes charts, photos and diagrams. Ask for Bulletin No. 211.

When a batch of boxboard is in its infancy . . . at the wet end, that is . . . it needs watching aplenty. It can get out of caliper while your machine tender has stopped for a smoke. And before long you've wasted a lot of raw material . . . produced a roll or two of overweight stock . . . and added some red ink figures to your production costs.

But it's a different story when your Hurletron Caliper Control is on the job. It never sleeps . . . never takes time out. It catches an out-of-caliper condition instantly . . . watches it until a certain trend has been established . . . then quickly corrects the situation . . . while keeping a continuous record of the entire operation at both the wet and dry ends. And it's all done automatically . . . without fuss and bother . . . without any attention from your machine operator.

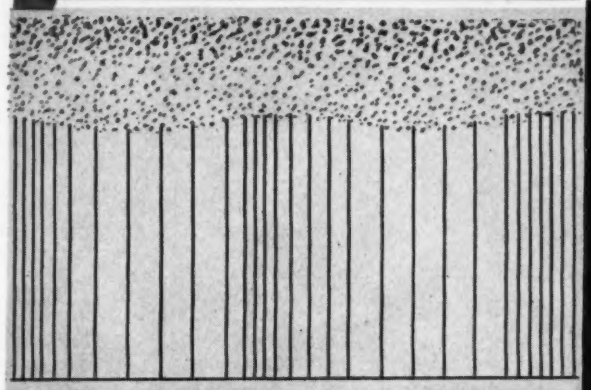
Attention like that is worth a lot of money to you . . . but it doesn't cost a lot for Hurletron equipment actually pays for itself very quickly through direct savings. This has been proved in dozens of Hurletron-equipped mills. (The photos above were taken in the plant of Alton Boxboard Co., Alton, Illinois.)

Want to know more about it? Write, wire or phone us. There's no obligation.

ELECTRIC EYE EQUIPMENT COMPANY 10 WEST FAIRCHILD STREET • DANVILLE, ILLINOIS

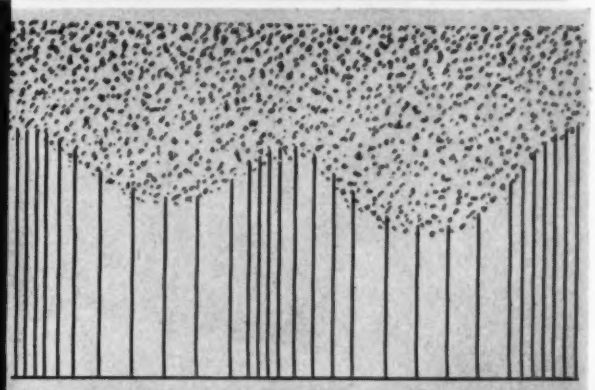
FOR UNIFORM PENETRATION
OF ADHESIVE IN CORRUGATED PAPERBOARD

CONTROLLED PENETRATION WITH KELSIZE



Here — you can see how penetration of adhesive is controlled, regardless of variation in paperboard porosity, through the use of a fraction of a per cent of Kelsize added to the adhesive.

UNCONTROLLED PENETRATION



Note that where application of adhesive is uncontrolled, the variation of adhesive penetration is in proportion to the variation in porosity of the paperboard.

. . . use KELSIZE

KELSIZE . . . gives you these advantages

- Less adhesive used . . . less moisture to remove
- Reduced warping . . . stiffer board
- Higher machine speeds
- Adhesive where you want it . . . where it's needed

Our Technical Service Department will gladly give you more detailed information. Write or call our nearest divisional office.

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L&N pH indicator

New L&N pH Indicator. Equipment includes: line-operated pH Indicator and Electrode Holder Assembly. Indicator case, of grey-enameled aluminum, measures 10½" x 10¼" x 8⅜".

• eliminates range changing

• readable to within ±0.02 pH

This *converter-type* pH Indicator offers remarkable stability. Embodying important refinements in circuit design, it is unaffected by normal fluctuations in line voltage . . . or by zero drift of the amplifier.

In lab or plant—you'll appreciate the many advantages of this new instrument. The few required adjustments are simple to make. Single, *continuous* pH 0 to 14 scale eliminates range changing . . . a big help when you're working near pH 7. And you can read to within ±0.02 pH . . . on either grounded or ungrounded solutions.

Key to stability: the Indicator incorporates the high quality shielded *converter* developed for our Speedomax electronic recorders. Its circuit employs d.c. to a.c. conversion, a.c. amplification, and conversion back to d.c. for voltage feedback. Conversion stabilizes zero. Feedback stabilizes gain.

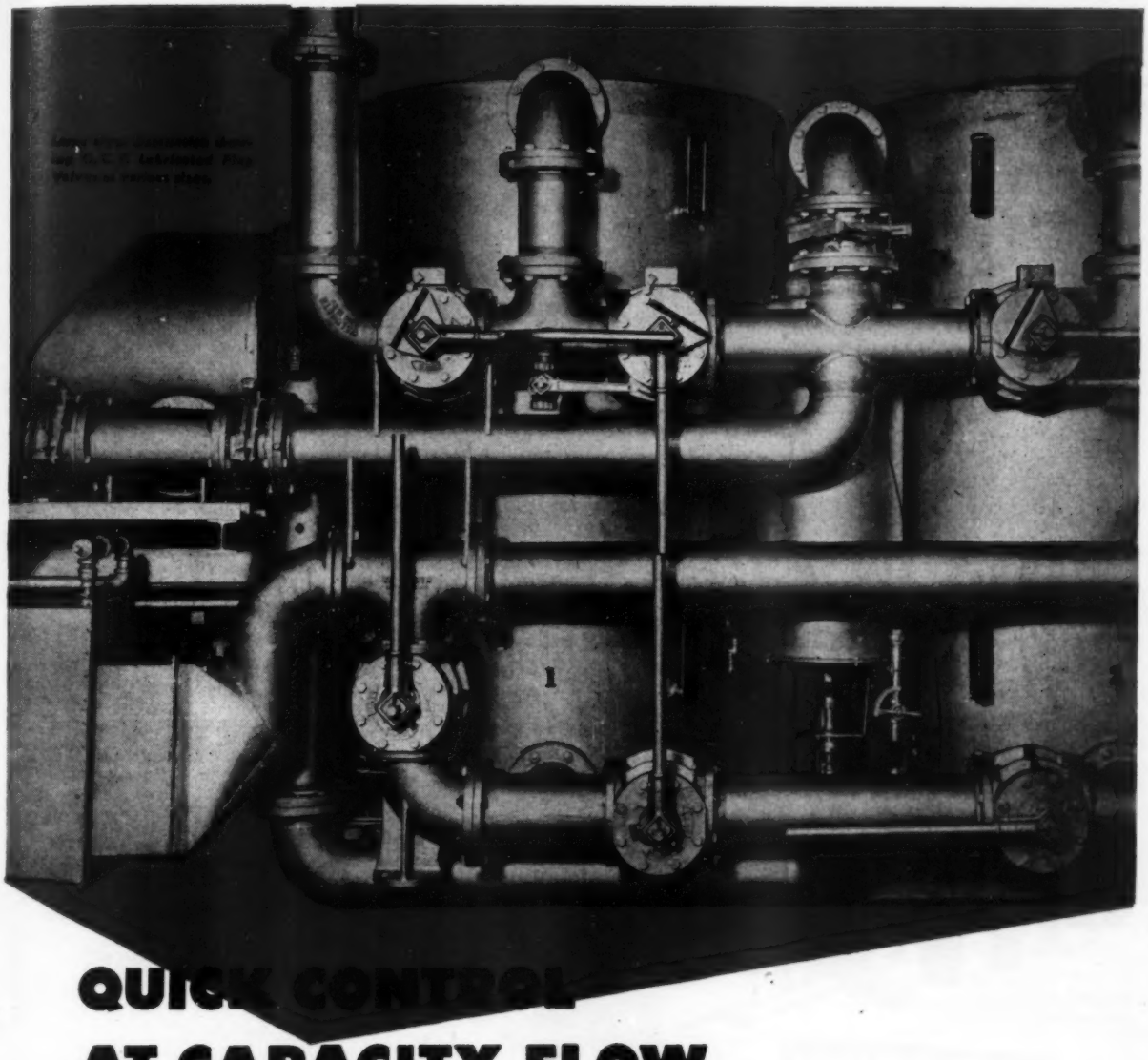
For details—send for Folder EM9-96(1). Write 4974 Stenton Ave., Phila. 44, Pa.

Check these distinctive L&N advantages...

- ✓ **Continuous 5½" scale**—covers full range of pH 0 to 14 . . . readable to ±0.02 pH.
- ✓ **Electrode system**—takes any suitable type . . . but circuit especially designed for high resistance glass electrode systems.
- ✓ **Grounded or ungrounded solutions**—can be checked with equal ease and accuracy.
- ✓ **Only 2 controls, 1 switch**—standardization and temperature-millivolt controls . . . zero switch.
- ✓ **4 voltage ranges**—0 to +700, 0 to −700, 0 to +1400, and 0 to −1400 mv . . . for redox work and Karl Fischer Titration measurements.
- ✓ **Fast warmup**—not more than 1 minute.
- ✓ **Short response time**—1.5 seconds . . . for most readings.

LEEDS NORTHRUP

Jrl Ad EM9-96(1)



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a.c.f. CYLINDRICAL FULL PIPE AREA **PLUG VALVES**

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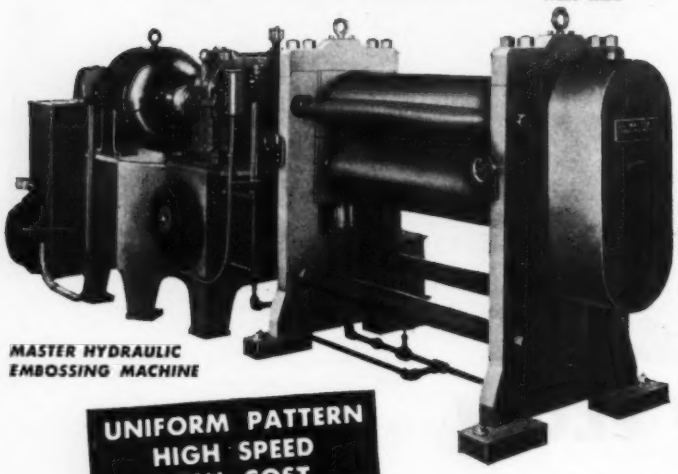

MASTER HYDRAULIC EMBOSSING MACHINE

UNIFORM PATTERN HIGH SPEED LOW COST

U. S. Patent Pending

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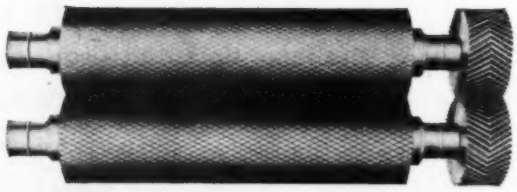

ENGRAVED MATCHED HARDENED FORGED STEEL ROLLS

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These 2 TIMKEN® wear-resistant steels will do 90% of your hollow parts jobs!

52100 TUBING

High carbon chrome steel—a direct-quenching steel which gives through hardness in moderate sections.

Typical uses: aircraft parts, slitter knives, bearing races, collets, bushings, spindles, grinding machine parts, precision instrument parts, pump parts and plungers.

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Low carbon nickel-moly steel—a carburizing steel which gives high surface hardness with a tough core.

Typical uses: Piston pins, bearing races, farm equipment parts, knitting machinery parts, sleeves, bushings, pump parts, perforating guns.

. . . and are available now in small lots

If you're in a big hurry for a small amount of steel tubing, let Timken 52100 and Timken "Nickel-Moly" steels help you out. These two general purpose steels have good hardenability and wear resistance, can do 9 out of 10 of your hollow parts jobs! And they're available for immediate shipment in small quantities within 24 hours after receipt of your order!

Use Timken 52100 steel if you need a steel that can be heat treated to file hardness and tempered back to any desired point. A high carbon steel, it is through-hardening in moderate sections, has high wear resistance and can often be used in place of more expensive steels. Available in 101 sizes from 1″ to 10½″ O.D.

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With both these Timken steels, you can be sure of uniformity from tube to tube and order to order. That's because the Timken Company maintains rigid quality control from melt shop through final tube inspection. For the current mill stock list, write The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

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Specialists in alloy steel—including hot rolled and cold finished alloy steel bars—a complete range of stainless, graphitic and standard tool analyses—and alloy and stainless seamless steel tubing.

MURCO STAINLESS STEEL FLAT SCREENS

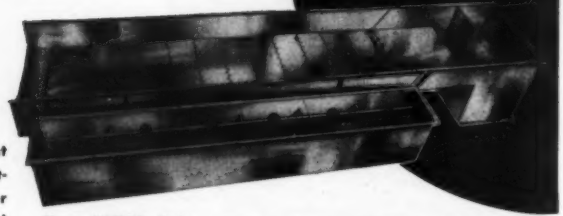
All parts in Contact with **PAPER STOCK** *are....*

STAINLESS STEEL

FOR USE ON EITHER FOURDRINIER OR CYLINDER MACHINES!

VAT BOX

MAY BE TILTED FOR RAPID CHANGES OF PLATES AND WASHING OUT



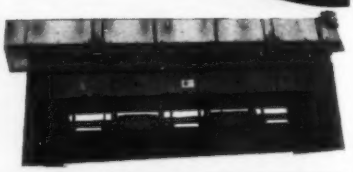
BUILT FOR 8 - 10 - 12 OR 14 PLATES

MURCO Stainless Steel Flat Screen is particularly adaptable for running different colors and grades of paper and board stock — any operation where cleaning and preparing the screen for the next run demands continuous production without loss of time. The upper part, or plate section, of the vat can be removed entirely, and replaced easily with a spare section instead of taking up the plates. Color changes may be made without tipping up plates. Clean out is obtained by heavy flushing between changes. Stainless steel construction, the corners are rounded so they are free from anything that might cause hanging up of fibres. Neat in appearance, and made of stainless steel, it never requires painting . . . built for 8, 10, 12, or 14 plates . . . screen plates are held by flat head stainless steel screws.

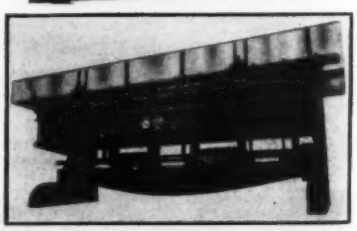
An exclusive feature is the non-tip diaphragm actuating mechanism, designed to be easily removed without disturbing the other parts. Its features of construction and operation with high production but low HP requirements, and the efficiency and quiet operation are a surprise to mill men wherever installed.

Write for complete details.

Many MURCO Stainless Steel Flat Screens have been installed throughout the country, and are all operating with a high degree of satisfaction.



Illustrations show Vat and Suction Box, Eccentric Drive Mechanism and the Under Frame.



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Manufacturers Since 1883
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LOOK INSIDE THE SHIPPING BOX

for a solid selling secret!

Look at the little boxes in the big boxes . . . see how a merchandising idea has been given continuity — how a sales theme has been carried out through COLOR.

Repeating the color of the folding boxes on the shipping container gives all the boxes a "family resemblance" that identifies the product during the entire sales procedure — to the wholesaler, the retailer, the consumer himself. The distinctiveness of this color associates the product with its manufacturer; suggests uses for merchandising displays. The dyestuff chosen has sales value!

With hundreds of shades in colors to choose from, you are practically certain to find a Du Pont dye that satisfies you and your customers. Our Technical Staff will help you in selection and application for each specific job. Write: E. I. du Pont de Nemours & Co. (Inc.), Dyestuffs Division, Wilmington 98, Delaware.

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Du Pont basic dyes

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FOR MAXIMUM LIGHT FASTNESS
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More color makes more business... for your customers and you

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Better Things for Better Living
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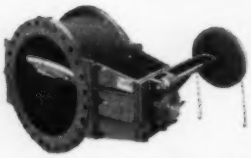
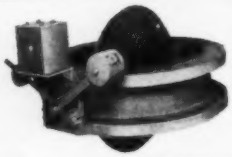
R-S valvEvents

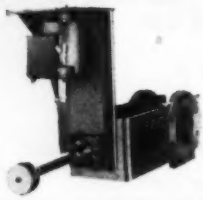
• EXCERPTS FROM THE R-S BOOK OF EXPERIENCE •



WATER SERVICE—No. 825—36-inch 125-pound cast iron valve equipped with 18—8 shafts, bronze bushings and rubber seat for 85-pound drip tight shut-off.

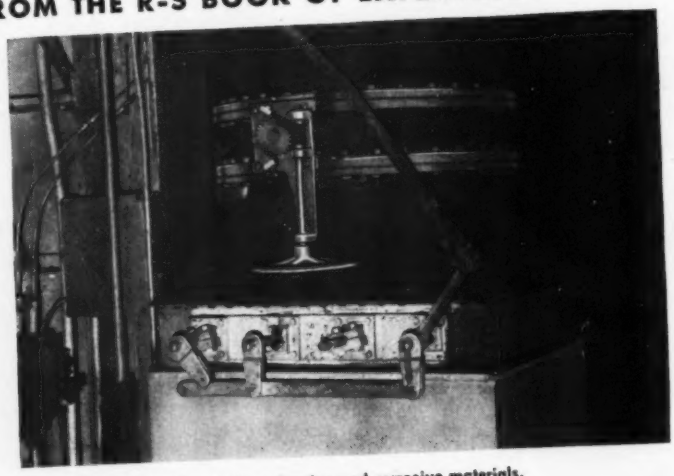


EMERGENCY OIL SERVICE—No. 628—solenoid trip valve. Should the solenoid function, the latch is tripped which causes the counter-weight to open or close the valve by gravity. Available in any metal or alloy and in various sizes for emergency shut-off or vent for air, gas, steam, oil, and water.



700° F. EXHAUST GAS SERVICE—No. 826—6-inch 125-pound R-S "H" metal valve used on small turbine generator. Equipped with 18—8 shafts, hastelloy bushings, finned lubricated stuffing box and solenoid trip mechanism.

STEAM SERVICE—No. 677—1500-pound welding end steel valve for superheated steam—A. S. M. E. Standards.



SEMI-SOLID SERVICE including abrasive and corrosive materials.

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Control and Shut Off Practically Any Material

The beveled vane seats firmly at a 12½° angle and is closed from a fully open position through 77½° of arc by either manual or automatic operation. A metal-to-metal seat gives satisfactory commercial shut-off. When required, Monel or stainless steel can be welded to the vane periphery and a babbitted seat used in the valve body. Drip tight or bubble tight closure can be obtained with a rubber seat.

Power controlled prime movers delivering the necessary foot pounds of torque open or close these self-cleaning valves at any desired speed from one second to eight minutes according to requirements. Pressures range from 2 to 2500 psig and temperatures from minus 300° F. to plus 2000° F.

Such simplicity of design, adaptability and operating ease are the reasons why R-S Valves can be installed to control and shut off the volume and pressure of any material that flows or is forced through a pipe.

Obtain full details from your R-S representative.

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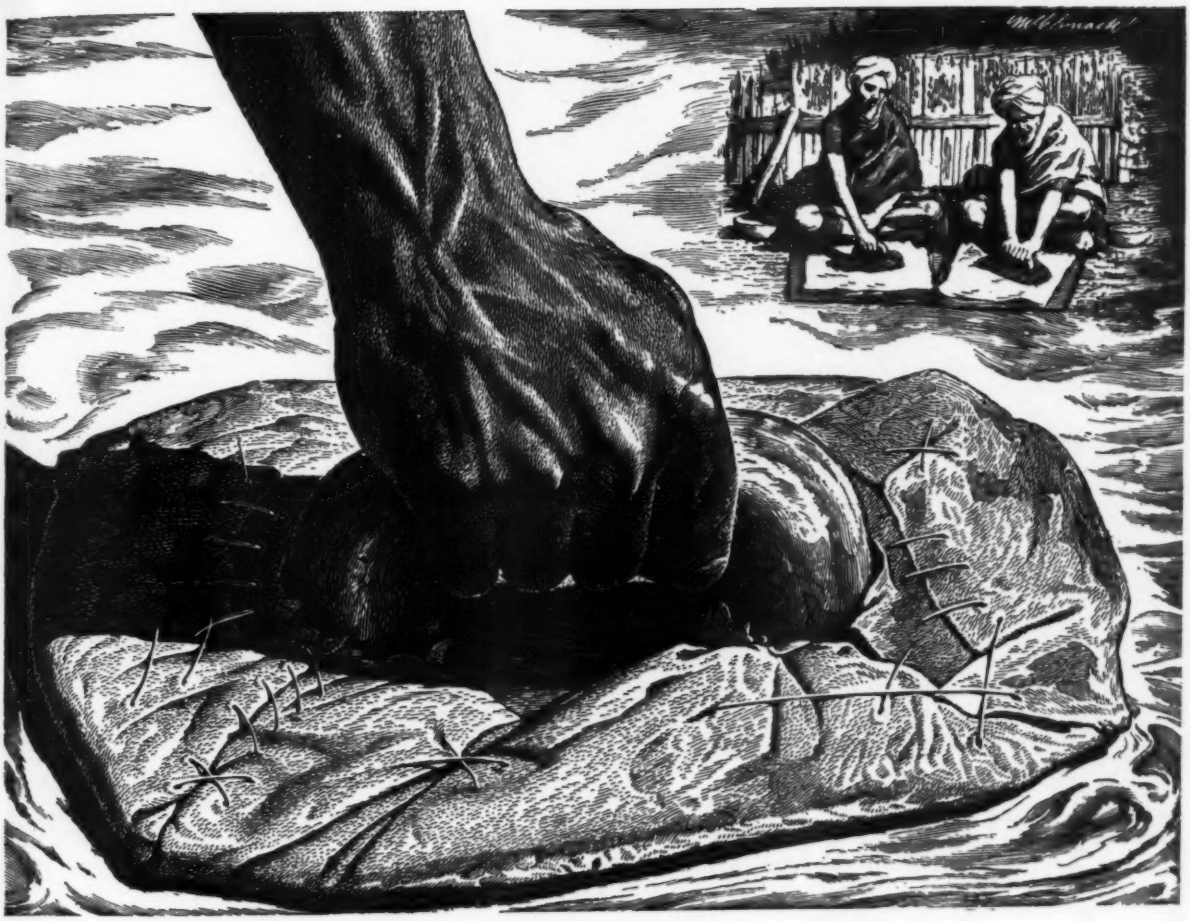

This crude tool began 17 centuries of paper sizing...

Slowly, laboriously, the Asiatic papermakers of the 8th Century A.D. worked with crude tools such as this . . . sizing the surface of their writing paper to make it impervious to ink. Pouring a thin starch paste over each sheet, they slowly worked it into the paper with this clumsy, wooden, trowel-like tool.

Today's high-speed machines size tons of high grade paper in hours—a far cry from the first hand sizing operations. Staley, serving the paper industry for over 30 years, makes a wide range of highly refined and modified starch and dextrin products that produce outstanding results in modern paper mill operations. If dependability, quality, fair prices and the *plus* of technical assistance are important to *you* . . . get in touch with your material supplier—or write direct, *today*.

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Staley makes a full range of starches and dextrins for beater, surface or calender sizing.

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Staley Starches and Dextrins give better results for machine or regular brush coating.

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Choose Staley's finer corrugating starches, special laminating and bag adhesives.

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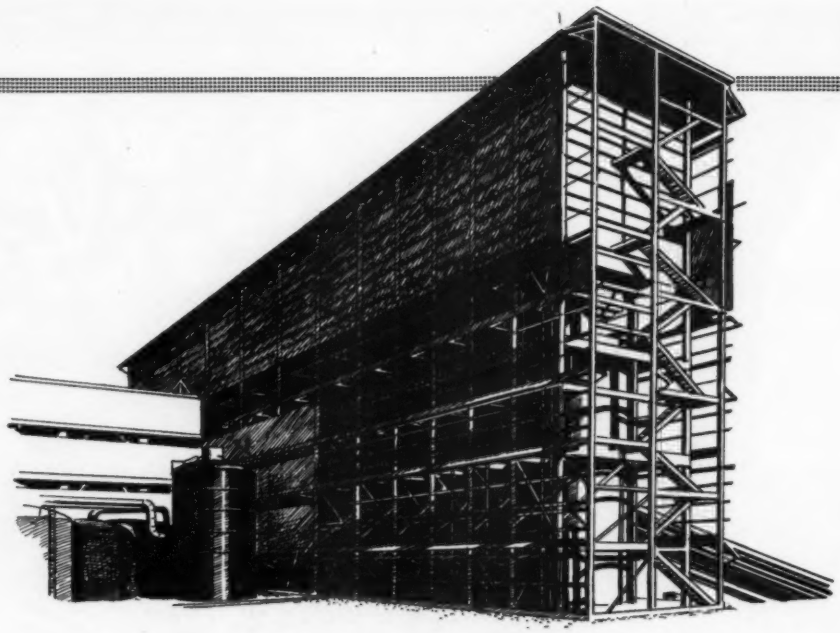
"Sweetose" and Staley's Corn Syrup are ideal softening agents for glassine paper.



A YEAR OF CONSTRUCTION

A major expansion program, now nearing completion, substantially increases the company's productive capacity. St. Regis products include sulphate pulp, kraft paper and board, multiwall bags, a wide range of printing and publication papers, industrial and decorative plastics. Shown above is an enlarged digester building at the Pensacola, Florida, mill.

SUMMARY OF CONSOLIDATED INCOME

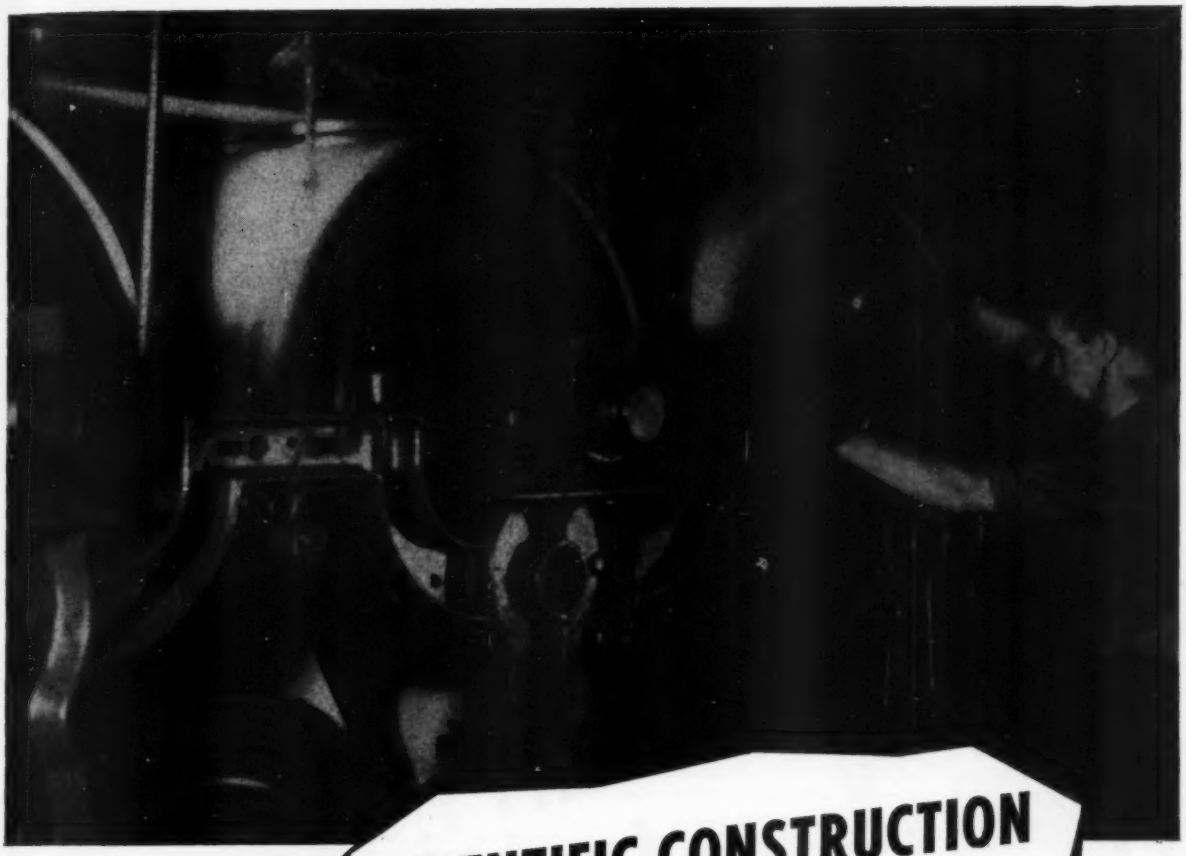
	For the Years Ended December 31, 1951 and 1950.	
	1951	*1950*
Net Sales, Royalties, and Rentals	$195,955,617	$154,789,186
Cost of Sales and Expenses	$159,845,270	$134,376,511
Operating Income	$ 36,110,347	$ 20,412,675
Income Credits	$ 4,756,969	$ 1,362,283
Gross Income	$ 40,867,316	$ 21,774,958
Income Charges	$ 2,126,473	$ 1,626,088
Net Income Before Provision for Federal and Foreign Taxes on Income	$ 38,740,843	$ 20,148,870
Provision for Federal and Foreign Taxes on Income	$ 21,944,809	$ 8,525,126
Net Income	$ 16,796,034	$ 11,623,744
Dividends Paid		
Preferred Stock	$ 708,193	$ 752,105
Common Stock	$ 4,136,531	$ 3,619,500

ST. REGIS PAPER COMPANY

230 PARK AVENUE, NEW YORK 17, N. Y.

Offices in Principal Cities

In Canada: St. Regis Paper Company (Canada) Limited, Montreal



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Makes the Big Difference
In DRYER FELTS

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Gives You Scientific Construction*

Determining yarn tensile strength with 300-lb. vertical test. One of a series of comprehensive laboratory controls throughout production to assure uniformity in all Mt. Vernon-Woodberry products.

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*Asbestos Yarns Woven Into The Face of Woodberry 887 Heavy Duty Dryer Felt

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Pulps made with the Sutherland High Yield System have not only set new standards of forest and mill economy, but higher standards of quality as well. Independent data from many different mills show that these high yield pulps have remarkable mullen and tensile strength at raw stock freeness, and that their felting power is excellent. Wherever kraft grades require high strength, these high yield pulps can be used to great advantage.

When you install a Sutherland High Yield System in your mill you do three things: you improve quality, reduce costs, and help conserve our forest resources.

SUTHERLAND

continuous beating systems

Designed, Engineered, Serviced

by SUTHERLAND REFINER CORPORATION

TRENTON 8, N. J.

The Paper Industry

April 1952

Supply and demand in wood pulp

Expansion in domestic production facilities cannot alone assure the increased output of wood pulp required by the constantly growing paper industry. For hand in hand with efforts to assure greater output has been an equally steady extension in world demand. Thus, the *potential* and *actual* supply figures this year may well vary—possibly to a great degree.

Potentially, the over-all supply of wood pulp available for domestic consumption during 1952 will be 1,000,000 tons (or 5 per cent) greater than that of 1951; this assumes no significant change in the volume of imports and exports. However, the supply actually delivered will be contingent on the domestic and world demand levels and, to an even greater extent, on the continued availability of adequate supplies of sulphur, pulpwood, and other vital raw materials.

The possible increase in wood pulp production during the current year follows on the heels of a record-breaking performance during 1951. In that year the United States output was 16,494,000 tons, exceeding the 1950 total by 1,687,000 tons, or 11 per cent. Imports stood at 2,375,000 tons and were just about equal to those of 1950; while exports, although double the 1950 volume, amounted to only 195,000 tons. These figures, released by the United States Pulp Producers Association Inc., represent the country's aggregate *new supply*, which for last year was 18,674,000 tons, 9 per cent above the 1950 record.

It was this increase in the new supply of wood pulp available for United States consumption that helped make possible the new all-time record for domestic paper and board production. That production during 1951 was 26,086,000 tons, an increase of 7 per cent over 1950.

In the field of market chemical pulp for papermaking, the U. S. is currently receiving a reduced volume at a time when the world production stands at about 10 per cent above 1950. Many sources view this situation as resulting directly from the effect of wood pulp price controls, which were put into operation July 1, 1950. Controls have definitely caused a diversion to other world markets.

Any worthwhile picture of the present situation in market wood pulp must necessarily be based on a comparison between the conditions existing before and after controls.

The total U. S. market chemical wood pulp supply from Scandinavia and North America, since controls became effective, has been at the rate of 3,118,000 tons a year, or 1 per cent below the 1950 level. The current rate of receipts from Scandinavia is 332,000 tons less than the 1950 rate, while the current rate of receipts from North America is 306,000 tons more.

A less favorable supply picture results from a similar comparison for paper grades of market chemical pulp, the grades primarily affected by M-72. The U. S. supply from the same major sources has, since controls were made effective, been at an annual rate of 2,301,000 tons, or 6 per cent less than the 1950 rate. The current rate of receipts from Scandinavia is 328,000 tons (56 per cent) below 1950; while the current rate of supply from North America is 176,000 tons (9 per cent) above the same period.

Aside from the direct impact of price controls on the current rate of supply, the U. S. Pulp Producers Association sees three other significant factors in the decline: (1) the limitation of U. S. market pulp consumption to 95 per cent of 1950; (2) the threat of market softness in certain paper lines, and (3) basic capacity changes in the converting segment of the industry.

Experts see only slight prospect of a 1952 world market chemical pulp supply exceeding that of 1951. The over-all world supply/demand balance must therefore result from a general decline in world demand. While such an economic decline would improve American availabilities, the decline would in itself destroy the need for increased tonnages. On the other hand, if there is no decline of importance in world wood pulp demand, the U. S. must continue to expect shortages as an inevitable result of price controls, since we are, under normal conditions, dependent on foreign sources for approximately 50 per cent of our total market chemical pulp supply.

50 per cent accomplishment

Since formation of the Bipartisan Hoover Commission to strengthen and reorganize operations in the federal government, approximately 50 per cent of the original recommendations have been adopted. This has meant an annual savings of $2 billion.

The present accomplishments represent the work of the 81st Congress, during which 21 laws and 26 Presidential reorganization plans were enacted. The record of the 82nd Congress shows little or no progress, despite the fact that 20 Hoover Report bills covering all the remaining 150 recommendations were introduced during the session.

Among the vital Hoover bills now pending are two directly affecting the paper industry. The Department of Agriculture is now spending $32 for each $1 spent 20 years ago; its employees have risen four-fold. A Hoover bill calls for simplification of this sprawling collection of agencies in order to benefit farmers and taxpayers alike.

Competition between the Army Engineers and the Bureau of Reclamation is making impossible wise conservation of natural resources. Three separate Hoover bills are designed to remedy the situation, while also relating national needs in this area of government to the national capacity to pay.

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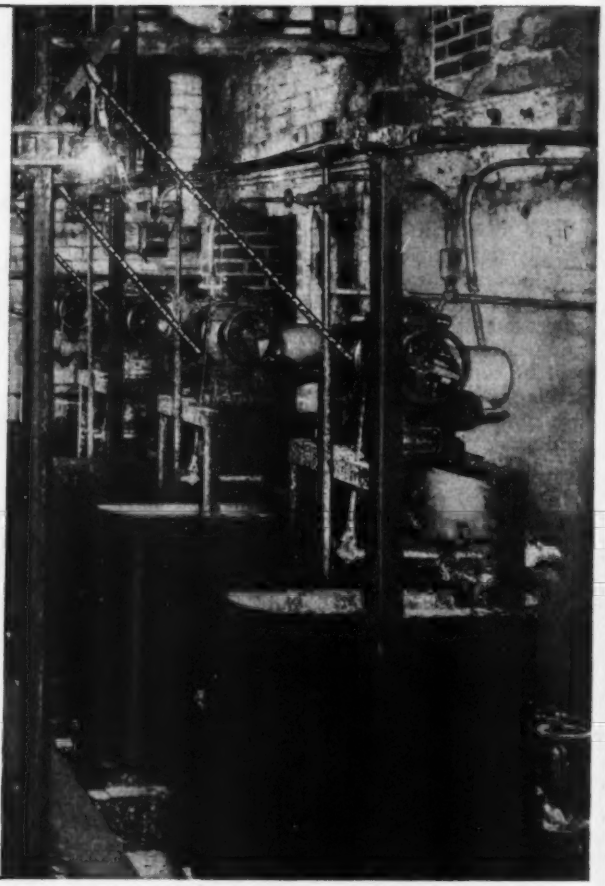

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The Paper Industry Current Comment

Financial respectability

Optimism and pessimism as expressed in two of the outstanding addresses at the recent APPA convention in New York, N.Y., have proved correct in diametrically opposite directions during the past month.

Optimism as to the basic stability of the industry, however, does not necessarily conflict with the pessimism as to America's future if political programs are not radically altered.

George Olmsted Jr., ex-president of American Paper and Pulp Association, pointed out that the paper industry has achieved financial respectability in the eyes of the investing public and banking fraternity. Official reports of the Wellington Fund, one of the largest mutual investment companies and one of the most conservative of such companies, listed $3,500,000 in paper mill securities at the end of 1951, and in the last half of 1951 the purchase of 2,100 shares of Crown-Zellerbach, 1,500 shares of International Paper, and 10,000 shares of Marathon. Previously the Fund had several thousand shares of stock in Union Bag, Kimberly-Clark and Weyerhaeuser, as well as large holdings in other companies.

On the darker side of the picture, the menace of suicide by over-taxation pointed out by Cola G. Parker, president of Kimberly-Clark Corp., was emphasized by announcement by Crown-Zellerbach Corp. that it has decided against carrying out a previously planned $20,000,000 expansion program. Shortages of material were given as one reason for this decision, and in addition the question was raised whether there is any need for additional kraft capacity to meet the defense program. Also, the annual report by the International Paper Co. was significant in its showing of a hugely increased output, but a sharply curtailed profit margin. The 1950 tax bill of nearly $115,000,000 was almost equal to the company's net profit and tax combined in 1950.

Potential upturn

As to the long pull for 1952, however, a critical student of economics has given the opinion that if the chief makers of non-durable goods come through with the moderate pick-up that is expected in the second quarter, there is a potential upturn in the fall when the manufacturers of consumer goods are again using their normal qualities of packing and shipping paper and paperboard.

That the paperboard slump has reached its low point is generally believed. Paper and paperboard production in January was 1,942,000 tons, a drop of 13.8 per cent from January 1951. However, in the paperboard field the drop was 28 per cent, while paper production was up 5 per cent over January 1951. It is not believed, however, that this spread between paper and paperboard will continue much longer.

Brightening picture

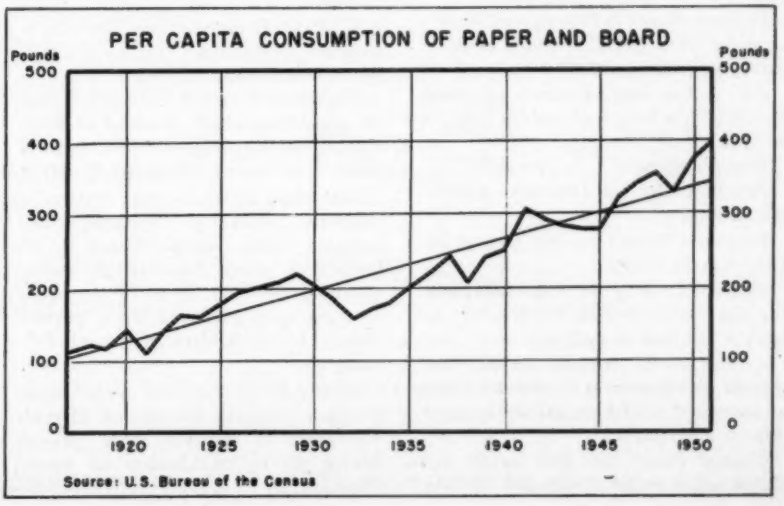
An easing in the general situation is evident in action by the National Production Authority, which has suspended until July the reserve production and consumption controls over unbleached sulphate pulp and has lengthened the inventory limitations on this grade to 120 days instead of 60 days. The inventory of unbleached sulphite can now be 90 days instead of 45 days. The easing in the demand picture, however, has not been sufficient to have any effect on prices, which are generally firm to higher in many paper grades.

While in the eastern market the drop in demand for paperboard has had anything but a firming effect on the wastepaper market, a Pacific Coast paper stock firm has been sued by the Office of Price Stabilization for treble damages of $750,000 for violating wastepaper price regulations. The affected company is the largest dealer in waste on the Pacific Coast, with branches in ten cities.

Mobile Paper again

The much-discussed Mobile Paper Co. case has again come into the Washington news. Sen. Karl Mundt has asked the Justice Department for an early report on its investigation of Reconstruction Finance Corporation loans involving Congressman Boykin of Alabama. The Senate Committee of which he is a member some time ago sent the Justice Department its analysis of the Boykin operations. The call for data on the Boykin operations was one of several in which the propriety of actions by various Washington personages was questioned, and in which the Justice Department was asked to investigate the possibility of criminal proceedings.

Congressman Celler, who headed the committee to investigate newsprint, has asked the Attorney General to investigate the possibility of collusion between newsprint producers to increase prices. He asks that monopoly practices by American corporations and their subsidiaries be eliminated. This is another effort to start action against American companies, despite the fact that three



quarters of the United States consumption comes from Canada where United States anti-trust laws patently do not apply.

R. A. McDonald

Another outstanding paper industry personage has been loaned to the Government as a participant in the management of the defense program. R. A. McDonald, executive vice president of Crown-Zellerbach Corp., has been named assistant administrator of the National Production Authority. He will be in charge of the Industrial and Agricultural Equipment Bureau, which covers 10 industry divisions, including agricultural machinery and implements, construction machinery, electrical equipment, engine and turbine general components, general industrial equipment, metal works equipment, mining machinery, motor vehicle and railroad equipment. This is part of the program to rotate men of exceptional business experience in the Government agency handling basic defense production programs.

Financial Reports

Uncertainty as to the future, with a steel strike in the offing, and the possibility of a truce in Korea, kept Wall Street securities in an uncertain position during the month with few significant changes in quotations on paper mill issues.

Net incomes

Abitibi Power & Paper Co.—Net income for 1951 was $12,997,877, as compared with $12,623,833 in 1950.

Allied Paper Mills—Net income for 1951 was $840,668, compared with $1,067,780 in 1950.

American Box Board Co.—Net income was $1,596,728 for the year ended November 30, 1951, as compared to $1,137,967 for the same period in 1950.

Bathurst Power & Paper Co.—Net income for 1951 was $3,485,927, as compared with $2,613,229 in 1950.

Bird & Son—Net income in 1951 was $1,550,777, as compared with $1,168,779 in 1950.

British Columbia Forest Products Ltd.—Net profit for the December quarter was $282,123.

Carpenter Paper Co.—Net income for 1951 was $1,792,090.

Celanese Corp. of America—Net profit for 1951 amounted to $24,800,263, as against $40,361,166 in 1950.

Celotex Corp.—Net income for three months ended January 31 was $317,097, as compared with $930,503 in the same quarter a year ago.

Central Paper Co.—Net income for six months ended December 31 was $259,798, as compared with $195,009 for the comparable period in 1950.

Robert Gair Co.—Net income for 1951 was $17,075,366, as compared with $6,360,222 in 1950.

S. D. Warren Co.—Net income for 1951 was $2,388,701, as against $2,636,290 in 1950.

St. Regis Paper Co.—Net income for 1951 was $16,800,000, compared to $11,263,744 in 1950.

Watervliet Paper Co.—Net income for 1951 was $457,933, compared with $516,129 in 1950.

West Virginia Pulp & Paper Co.—Net income for the quarter ended January 31 was $2,564,000, as compared with $2,676,000 in the same quarter a year ago, though sales were up $3,000,000.

Dividend declarations

Brown Co. has declared the regular dividend of $1.25 per share on first preference stock and 75 cents per share on second preference stock, payable March 1 to stock of record February 21.

Consolidated Paper Co. has declared a dividend of 50 cents a common share, payable March 1 to holders of record February 18.

Corrugated Paper Box Co., Ltd., has declared an initial dividend of 12½ cents on new common, payable March 1.

Gaylord Container Corp. has voted 37½ cents on common, payable March 10 to record March 1, and a stock dividend of 5 per cent, payable April 16 to record March 26.

Minnesota and Ontario Paper Co. has declared a quarterly cash dividend upon its common stock of 50 cents per share to shareholders of record March 31, payable April 25.

Nekoosa-Edwards Paper Co. has declared a dividend of 40 cents per share, payable March 10 to holders of record February 27.

St. Regis Paper Co. has declared a quarterly dividend of 25 cents a share on the common stock, payable March 1 to stockholders of record February 8, and the regular quarterly dividend of $1.10 a share on the preferred stock, payable April 1 to holders of record March 7.

Sutherland Paper Co. has declared a quarterly dividend of 37½ cents on the common share, payable March 15 to holders of record February 15, and a quarterly dividend of $1.10 per share on cumulative preferred stock, payable March 15 to holders of record February 15.

United Board & Carton Corp. has declared a quarterly dividend of 25 cents per share of common stock, payable March 10 to stockholders of record February 20.

Whitaker Paper Co. has declared a regular quarterly dividend of 50 cents a share on common stock, payable April 1 to stockholders of record March 14.

Paper mill corporate changes

Canadian Chemical & Cellulose Co., Ltd., will come to market soon with a public offering of 1,000,000 shares of common stock. Half the offering will be made in this country through a group headed by Dillon, Read & Co., Inc., and half in Canada through Nesbitt, Thomson & Co., Ltd., and Wood, Gundy & Co., Ltd.

Hammermill Paper Co. has approved a two-for-one split of the common stock.

Marathon Corp. has announced that the Lee Higginson Corp. of Chicago heads a group of underwriters offering 400,000 shares of a new issue of Marathon common stock with a par value of $6.25 per share.

Scott Paper Co. has notified stockholders they will be asked to vote on increasing authorized common stock and indebtedness at their meeting April 24. If approved, the proposal would raise the common stock from 3,000,000 to 5,000,000 shares and the authorized indebtedness from $4,000,000 to $25,000,000. The officials said they would announce later plans for any future financing.

West Virginia Pulp & Paper Co. has approved a resolution authorizing the directors to adopt a stock-option plan.

New York Stock Exchange—Stocks

	Closing Prices Mar. 20, 1952	Feb. 20, 1952
A.P.W. Products	* 5⅞-6¼	6
Celotex	18⅝	17¾
Same Preferred	16½	16⅝
Certain-teed Products	15⅝	14½
Champion P. & F. Co.	26⅛	26½
Same Preferred	*102⅝-103	101½
Chesapeake Corp.	33½	33
Continental Diamond	13⅝	14
Container Corp.	34⅝	34⅝
Same Preferred	*100-102	* 99-102
Crown Zellerbach	56	55⅜
Same Preferred	102	100⅝
Dixie Cup	32⅛	31¼
Eastern Corp.	23⅜	23
Robert Gair	18⅜	17¼
Same Preferred	* 19¾-19¾	* 19¼-19½
Gaylord Container	29	30⅜
International Paper	46½	46⅝
Same Preferred	*100⅝-103	*100⅝-103
Kimberly-Clark	46⅜	46⅜
MacAndrews & Forbes	41⅝	* 42-43
Marathon	26¾	25¼
Masonite	31¼	29
Mead Corp.	25½	25
Same Preferred	92½	91¼
National Container	12⅜	12¼
Rayonier, Inc.	58⅛	63
Same Preferred	* 36¼-36⅛	36½
Scott Paper	51⅝	53
Same $3.40 Preferred	* 91-92	* 90⅝-92
Same $4 Preferred	*102¼-102¾	*103¾-104
St. Regis	21⅛	21⅛
Same Preferred	91¼	89
Sutherland Paper	23¼	24½
Same Preferred	106¼	104½
Union Bag & Paper	46⅝	46⅛
United Board & Carton	* 15⅛-16	16⅜
United Wall Paper	3	3⅛
Same Preferred	* 24¾-25¾	* 25¼-25¾
U.S. Gypsum	110⅝	102
Same Preferred	*172-175	169½
West Virginia P. & P. Co.	* 73-75	73
Same Preferred	108	107¾

New York Stock Exchange—Bonds

Celotex 3½%	100	.....
Champion P. & F. Co. 3%	101½	.....
Mead Corp. 3%	99	.....

New York Curb Exchange—Stocks

Am. Writing	11⅛	11⅝
Great Northern	57⅜	57
Hammermill	.....	39½

* Closing Bid and Asked Prices

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The Paper Industry News of the Industry

Bowaters Southern Reports Tennessee Plans as . . .

Mill Expansion and Improvement Continue Rapid Pace

Bowaters Southern Paper Corp. has been granted a certificate of necessity for the $50,000,000 newsprint mill it will build near Charleston, Tenn. The plant is to produce at the rate of 125,000 tons per year, with initial production set for January 1954.

Under the certificate, 45 per cent of the base construction cost may be amortized over a five-year period for income tax purposes. Plants are normally amortized over a 20-year period. The quick amortization would reduce tax payments under a plan approved by Congress to speed construction of needed plants.

The mill site will be in McMinn County in an area roughly 2½ miles long and a mile wide. Bowaters Southern recently began assembling about 7,500 acres of property for the installation. Late in 1951 it purchased 579 acres of timberland in Georgia as a partial source of supply.

Gov. Gordon Browning of Tennessee said last fall that the supply of pulpwood in the Charleston-Calhoun area of the state is sufficient to supply the plant. He added that thousands of acres of wasteland in the region would be planted in pine for pulpwood production. In addition to newsprint, the mill will produce an annual 50,000 tons of market sulphate pulp.

Bowaters Southern is affiliated with Bowaters Paper Corp. of London, England, and is incorporated in Delaware. The firm is headed by A. B. Meyer of Greenwich, Conn.

Denver to Get Kraft Pulp Mill

Kraft pulp is to be produced in Denver, Colo., from beetle-killed spruce trees and other Rocky Mountain forest waste. This was announced recently by Heimbecher Sales & Service Co. of Denver. The project will draw its pulp wood supply from forests in Colorado, Montana, and Wyoming, where the native growth is more than 90 per cent Engelmann spruce.

According to Phil W. Stibbs, Heimbecher raw materials purchasing agent, "available as a raw material in the huge tri-state forest are enough beetle-killed trees, waste wood from timbering operations . . . and even sawdust to keep the industry going forever. We plan to start stockpiling pulp wood in Denver in June and have the first mill unit, with a pulp capacity of 25 to 30 tons daily, in operation this summer." There will eventually be five such units. The machinery for the first is to cost approximately $50,000, and the building to house it will bring the total to $96,000.

Weyerhaeuser Proceeds With Huge Everett, Wash., Mill

A spokesman for Weyerhaeuser Timber Co. at Everett, Wash., announced recently that, contrary to earlier fears, no building material shortages have developed to delay construction of the firm's 250-ton pulp mill. A crew of 50 at work sinking piling and pouring concrete in the early stages of production was to be expanded to 200 sometime during March.

The plant, which is to be ready for operation in July 1953, is to occupy a 25-acre tract immediately west of the present Weyerhaeuser sulphite pulp mill. The new installation will produce high grade bleached sulphite pulp for use in the manufacture of writing paper for packaging; it is also designed for emergency conversion to purified pulp for explosives.

An important feature of the mill in relation to Weyerhaeuser operations is that it will utilize waste from the firm's sawmill and other operations. The company plans to install two hydraulic log barkers to convert the present waste of slabs and edgings into chips for consumption by the sulphite operation.

St. Joe Builds $2 Million Florida Canal

Construction of a $2,000,000 canal was to have been undertaken in March by St. Joe Paper Co., Jacksonville, Fla. The project is to connect the firm's new pulp mill at Port St. Joe on the Gulf of Mexico with the Chipola River, 18 miles away, and will supply the installation with a daily 30,000,000 gallons of fresh water.

Water is now being obtained from wells, but the underground supply is uncertain. There is no surface water in the immediate vicinity.

Two pumping stations are included in the cost of construction. One is to be located at the river, the other at the Port St. Joe city limits. The canal is to consist of an open ditch from the river to Cypress Creek, piping underneath the creek, a continuation of the ditch to the Intercoastal Waterway, where the flow will be siphoned below the level of the waterway, and then another ditch to the Port St. Joe pumping station.

That section of the canal from the Intercoastal Waterway to the city is to be so constructed as to provide a reservoir for a 24-hour supply of water. The

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pump house at Port St. Joe is to be equipped with two 12,500 gpm pumps, 55-foot head, driven by 200 hp motors. The intakes are to be protected by traveling screens. The maximum amount of water to be taken from the Chipola River is 46 second feet and normally will not exceed 30 second feet.

Between the waterway and the pumping station the ditch will be 80 feet across the top and 50 feet at the bottom. The depth is to be 15 feet.

C-Z Decides to Delay New Kraft Pulp Facilities

Crown Zellerbach Corp., San Francisco, has revealed that it has decided against construction of additional kraft pulp facilities for which a certificate of necessity was issued last year in the amount of $19,700,000.

The company statement covering relinquishment of the certificate of necessity asserted: "Considerable time and thought has been devoted to the study of this project. It is our conclusion that with the continued shortages of steel, copper, and other materials the construction could not be efficiently and economically completed under present conditions. Another material factor affecting our decision was the substantial increase in kraft pulp production facilities in the U.S. and Canada, construction of which has been started or is now contemplated, since our application was filed."

Kimberly-Clark Reconditions Railroad Car Fleet

Kimberly-Clark Corp., Neenah, Wis., is currently reconditioning its growing fleet of railroad flat cars used in hauling pulpwood. One hundred of the flats are being serviced in the shops of the Green Bay & Western Railroad. Twenty-three of the reconditioned cars are already in service, with three a week being released to the company.

The units are being stripped down and thoroughly overhauled and rebuilt with the addition of a Kimberly-Clark designed steel end rack, which was developed by the K-C engineering department. The end rack makes log-handling and scaling easier.

When all the 100 flat cars are in service, K-C could couple a fleet of its own tank cars, hopper bottom cars, and flat cars together to make a train two miles in length. The firm today has 98 hopper bottom cars in its fleet. They are being used almost exclusively to move clay from Georgia to mills in Wisconsin.

Kimberly-Clark owns seven tank cars outright. Three are used to haul bleach liquor, four to haul chlorine. It leases three for short hauls and is currently having three more built for use on long-term lease.

MODERN WOODROOM at Mando's Fort Frances mill

Ontario-Minnesota Completes New Woodroom

New woodroom facilities at Ontario-Minnesota Pulp & Paper Co., Ltd., Fort Frances, Ont., were to be put into operation sometime in March. The step is part of a modernization program being carried out at the newsprint and specialty mill, a subsidiary of Minnesota & Ontario Paper Co. The original installation was made in 1914, when the mill was constructed.

The erection of the 73 by 164-foot building marks the final step in the complete rebuilding of Mando's woodroom facilities at the three plants in Kenora, Ont., International Falls, Minn., and Fort Frances.

With the use of the latest equipment in the new woodroom, barking for 24-hour groundwood operations will be obtained in 16 hours. Under the new plan of operations, logs are hauled by conveyors from the Rainy River and from the woodyard. The conveyors are a product of Vulcan Iron Works, Winnipeg. The river conveyor includes an extended jackladder that reaches out 120 feet into the river, where the stream is deep and the current fast. The swift current brings the logs to the mouth of the jackladder, adding to the efficiency of the operation.

Logs from the woodyard reach the woodroom via a 420-foot conveyor. This block-long conveyor transports wood hauled to the yard by trains and trucks. Railroad tracks parallel the sides of the conveyor, and one side is planked to allow the unloading of trucked-in wood.

Equipment

The new woodroom has four 12 by 45-foot barkers, as compared with six 9 by 30-foot barkers in the old installation. The barking drums are supplied by Horton Steel Works, Ltd., Fort Erie, Ont. Space for a fifth barking drum is provided in case future demands require it. Power is supplied by individual 150 hp electric motors through texrope drives. Electrical equipment was supplied through Canadian Westinghouse, Hamilton, Ont.

Removed bark is sluiced to the existing bark preparation plant in the old woodroom. Modernization is also scheduled for the preparation plant, including the installation of a new bark press and screens.

Lunch, locker, and washroom facilities are located on the ground floor directly beneath the slasher area. Ample light throughout the building is provided by 200 fluorescent units, each with two 40-watt tubes. Heating and ventilating systems were installed by Ross Engineering of Montreal. The building itself, erected by Stead & Lindstrom of Port Arthur, is a steel frame structure with brick walls. Foundations and floors are reinforced concrete. Roof construction consists of a poured concrete slab on steel purlins, insulated with one inch of Insulite and topped with built-up roofing.

Long-range Program

The modernization of the Fort Frances woodroom is a step in Mando's long-range modernization and improvement program started in 1945. During the last seven years nearly $29,000,000 has been expended. The next phase of the Fort Frances project is scheduled to start in May, when workmen begin construction of a groundwood mill. The new magazine grinders will use four-foot logs. Present hand-fed grinders will use two-foot lengths.

National Gypsum Starts New Mill

National Gypsum Co.'s new $5,000,000 Pryor, Okla., paper mill, designed to make the company entirely self-sufficient, has started production with 75 workers on three shifts. The rated capacity of the 125,000-square-foot plant is 150 tons daily. Production will include special types of laminated paper for use in the manufacture of gypsum wallboard, lath and exterior sheathing.

National Gypsum has also announced the completion of negotiations for the acquisition of Wesco Waterpaints, Inc., including plants, working capital, and good will. WESCO, with plants in New Jersey, Louisiana, Illinois, California, Washington, and Quebec, will improve National Gypsum's position in the market for wall and ceiling construction materials.

Moore Expands Niagara Falls Operations

Moore Business Forms, Inc., has announced the completion of an addition to the carbon coating and ink-making departments of its Niagara Falls, N. Y., carbon plant. Floor space in both departments was increased 50 per cent, and two new carbon coaters and a grinder have been put into operation.

The entire carbon production area was relaid, new lighting equipment was installed, and the interior repainted in pastel green to reduce eye fatigue. Increased efficiency in production results from a "straight-line" production flow.

Expansion Notes

Diamond Match Co.
has announced that its $4,500,000 mill and pulp plant near Superior, Mont., was scheduled for a construction start April 1.

Ketchikan Pulp Co.
will not award a general contract for the construction of its proposed pulp mill in Wacker, Alaska, until it is certain that materials can be obtained.

Dixie Cup Co.
has leased a modern 100,000-square-foot plant in Anaheim, Cal. The building was to be equipped and ready for production by April.

National Container Corp.
is opening a corrugated box plant in Rock Hill, S.C., which will produce all types of corrugated and solid fiber boxes for manufacturers and shippers in North and South Carolina, Virginia, and eastern Tennessee.

Paper Corp. of America
has started its Cheboygan, Mich., paper mill after closing it for repairs at Christmas. One paper machine was placed in operation, with the other scheduled for work as soon as possible. Slow delivery of machinery is delaying work on the new wood pulp and chemical plant.

Industrial Container Corp.,
New York, N.Y., shipping container manufacturer, is constructing the first unit of a Baltimore plant that will eventually comprise 200,000 square feet of working area. Operation is scheduled for early spring.

General Box Co.,
Jacksonville, Fla., manufacturer of paper board boxes and containers, has begun construction of a modern plant in Waycross, Ga.

Chatfield Paper Co.,
Cincinnati, has purchased the Electronics Laboratory building in Indianapolis and will use it for the warehousing and distribution of printing paper in Indiana.

Fibreboard Products Inc.
has installed giant rotary Miehle presses at its plants in Vernon and Stockton, Cal. The presses are for simultaneous color-printing of packages and cartons. The three-color press at Vernon and the four-color one at Stockton are capable of printing carton board sheets as large as 52 by 76 inches.

Warder Paper Box Co.
and Mullane-Rosengold, Inc., Niagara Falls, N.Y., have purchased the plant property of Niagara Wall Paper Co. for about $400,000. The wallpaper firm, founded in 1896, suspended operations in December.

Kansas City Container Co.
is a newly established firm in Kansas City, Mo., which has begun operations in a building that was inundated with 14 feet of water last July. The parent firm, National Mfg. Co., adjoins the renovated structure.

GENERAL VIEW of Espanola sulphate pulp plant of KVP Co. Ltd., where parchmentizing operations on a Puseyjones unit began recently

KVP Expands at Espanola as . . .

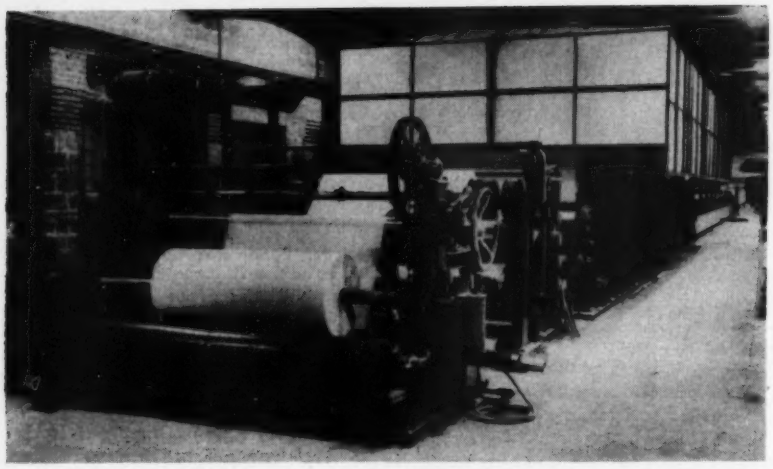
Canadian Developments Maintain Rapid Pace

Vegetable parchment is now being produced at the plant of KVP Co. Ltd., Espanola, Ont., in a development pointed toward integrating operations of the Canadian subsidiaries of Kalamazoo Vegetable Parchment Co.

A recent company announcement has revealed that weights and types of parchment now in most common use are being produced on a newly installed machine; and the plant will shortly be making a wider line than has been available in Canada in the past.

The new machine for the parchmentizing operation is housed in a specially constructed building measuring 55 by 225 feet, with basement, and ample space for a second machine. The unit was manufactured by "Puseyjones," with dryers having an 86-inch face that will produce a sheet 76 inches wide. Drive is by a Louis Allis variable speed ac motor. Auxiliary equipment includes a Whiting acid evaporator, the first of its kind to be built in Canada.

The machine wet end includes the latest design developments that have been worked out in the 42 years that KVP has spent in the manufacture of genuine vegetable parchment. Conversion



FINISHED END of new parchmentizing machine installed recently and now in operation at KVP

and sale of the vegetable parchment is being handled by Appleford Paper Products Ltd. at Hamilton. This concern was acquired by Kalamazoo Vegetable Parchment in 1945 and was recently moved to a new and modern plant.

More Grades Possible

Addition of more grades of parchment to this plant's operations will greatly widen its field. Currently the Appleford plant is the largest producer of household waxed papers in Canada and the leading source of supply of the dairy industry for printed butter wrappers. It also makes milk bottle tops, waxed papers for bread and carton-sealing operations, waxed glassine bags, sales books, place mats, baking cups, printed parchment for the meat, dairy and vegetable industries, and a wide line of food protection papers similar to those produced at the Parchment, Mich., plant.

At present approximately 275 tons of pulp are being produced daily at the Espanola sulphate mill, which KVP bought and rehabilitated in 1945. A portion of this output is pulp suitable for the production of waterleaf, which is made on one of the two paper machines in operation.

Point Edward Mill Site being Cleared

The site of a proposed groundwood and sulphite plant at Point Edward, Ont., is being cleared of buildings. There still has been no definite word that construction is going ahead. Plans reported more than a year ago in the *Canadian Observer* indicated that groundwood and sulphite would be processed at a $7,000,000 mill at Point Edward, then pumped across the St. Clair River to Port Huron, Mich., in slush form on a flume suspended from the Blue Water Bridge.

The estimated cost of the proposed conversion mill in Port Huron is $9,000,000. Here the groundwood and sulphite would be converted into catalogue and directory paper. Reports say that 90 per cent of the Point Edward mill's requirements would be shipped in pulpwood lengths by rail from the Gogoma region north of Sudbury. The remaining 10 per cent would be handled by water.

Powell River Maintains High Production

Despite several obstacles such as summer woods closures and expansion and construction programs during 1951, Powell River Co. Ltd. maintained its newsprint production level. In so doing it became the first mill in Canada to turn out an average of more than 1000 tons per day for an entire month.

Recent modernization of the No. 5 machine will further increase the rate of production by 250 feet of newsprint per minute. The old head box was removed and a new one installed. This necessitated raising the 120-ton wet end 38 inches, which enabled more stock to flow into the machine. Electronic drives replaced the old ones, and a new control panel was installed. Fiber gears were adopted in place of metal ones, thus there is no metal in contact in the gear operation.

Changes were also made in the beater room, which enabled the broke to feed directly into the beater without being manually handled. In several months the No. 6 machine will also be modernized.

Columbia Cellulose Digesters Require Modification

According to recent reports, the digesters at Columbia Cellulose Co., Ltd., Prince Rupert, B. C., are in need of modification. However, company officials have pointed out that production will not be greatly affected.

The recent difficulties have resulted from an early experiment undertaken at the time of mill construction, when the 19 by 60-foot vessels were welded on the spot, all welds gamma-rayed, and the completed digesters stress relieved in the field. This was done to overcome the problem of transporting the vessels to the mill site.

It now appears that the steel used in this pioneer experiment was more susceptible to expansion and contraction than had been calculated, and consequently the brick linings have shown cracking. The digesters will be taken out of use one at a time, enabling the plant to maintain nearly full production.

Modification will take the form of bands welded around the digesters to limit the expansion and contraction of the metal. The linings will be repaired where necessary at the same time.

Forest Landmark Felled

The last fir tree of what was once a vast virgin forest in the Saanich area of British Columbia has been felled. "Old Johnathan," or "King Tree" as it was known to the residents, was at least six centuries old. When Edward, the Black Prince, fought in France it was of good size, and when Champlain first saw Canada it was more than 300 years old.

The aged tree had become dangerous to life and power lines because of its huge limbs, which 150 feet above the ground were as thick as a man's body. At the butt the diameter measured nearly nine feet. The tree towered 250 feet into the air.

"King Tree" had survived man and nature. Half a century ago loggers cleared out the area, and 25 years ago the area was razed by fire.

B. C. Forest Management Policy Withstands Attack

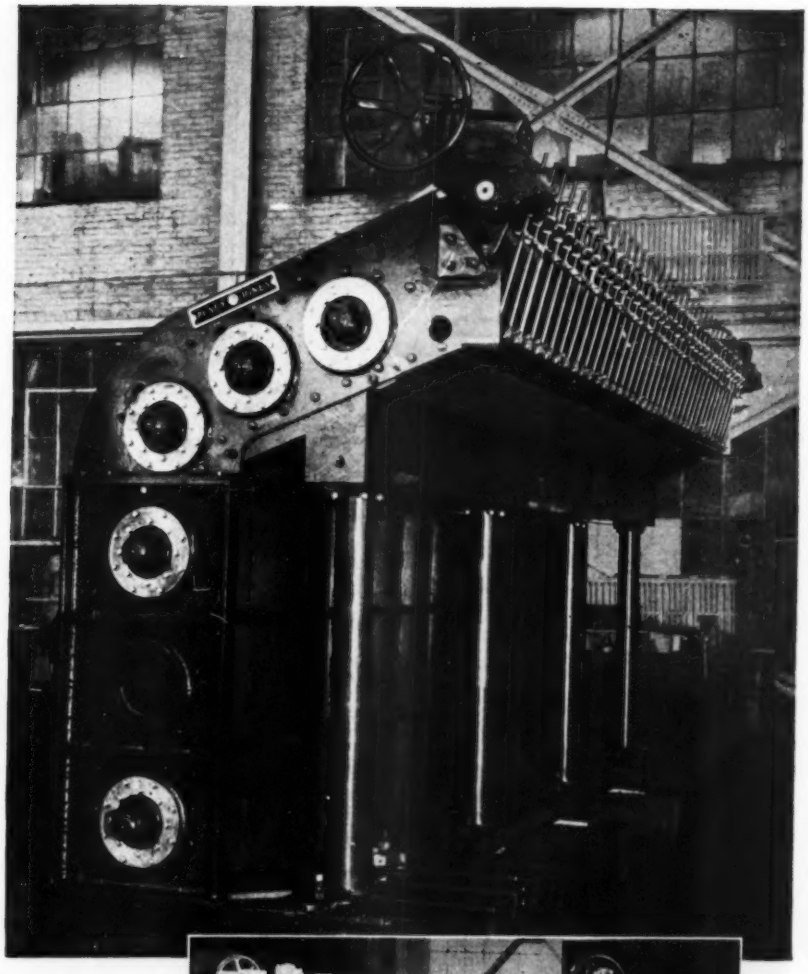
The forest management plans of the British Columbia government stood up under strong opposition from the B. C. Truck Loggers Association recently in Vancouver. The loggers wanted the present policy to be replaced by a forestry board that would comprise three or five men "of proven integrity." They felt that this would be of benefit to small operators.

Critics have said that present policies are placing the forest resources in the hands of a few large operators, making it more and more difficult for the smaller firms.

Government spokesmen and other speakers, however, detailed the entire forestry picture and the need for sustained yield, assuring the small operators that their needs would be considered. In fact, they said, without the license management policy the small operators would soon be put out of business for lack of timber.

The loggers were told that 11 public working circles were in plan, and that

Improved High-Speed Slice



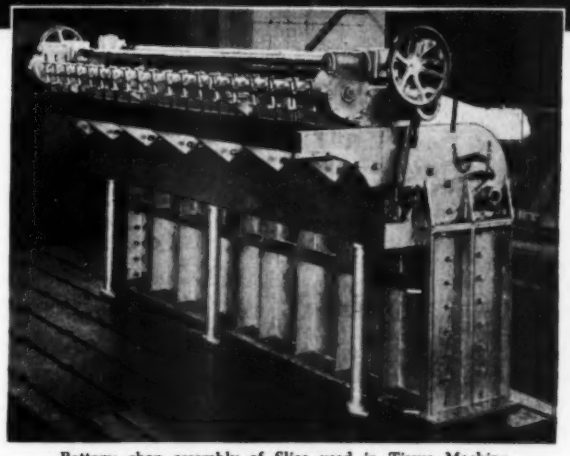
The Puseyjones Closed Pressure Slice, after several years of development and improvement, is now considered a "must" on today's high-speed machines.

Used in connection with the Puseyjones Flow Spreader, it provides an ideal approach flow to the fourdrinier, but may also be used with any form of multiple inlet type distributor when required by space restrictions or mill preference.

Now in operation on high-speed machines running on tissue, multi-wall bag, and under construction for liner board, it is the most compact and least complicated type of stock inlet available.

When rebuilding for higher speed and production, the saving in space usually permits lengthening the wire from 10 to 15 ft.

For complete details on the Puseyjones Closed Pressure Slice for your new or rebuilt machine, write or call us today.



Bottom: shop assembly of Slice used in Tissue Machine having 154" wire.

Top: shop assembly of Slice used on Multi-Wall Bag and Liner Board Machines. As shown, suitable for 228" wire.

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THE SIGN OF TRADE MARK SUPERIOR QUALITY

these would include 1,518,000 acres in the coastal region of the province. These would be operated by the government foresters in the same manner as the private management licences, roads would be put in, timber put up for auction as is now the custom, and the roads amortized proportionate to use. Thus the smaller operators would be able to have a guaranteed timber supply without which they would eventually go out of business. They were told that management licences were available to them, but that so far they had not been willing to accept the responsibilities of their occupation.

Canadian Notes

Abitibi Power & Paper Co.
has announced plans to set up a mineral exploration department under C. C. Huston, mining engineer. A party of 10 men will begin a three-year reconnaissance in the area northwest of Port Arthur and Fort William in western Ontario. Chief attention will be given to numerous greenstone areas.

Dixie Cup Co.,
Brampton, Ont., reports that work is well under way at its expansion project. At present, the plant built in 1948 at a cost of $350,000 covers 60,000 square feet. The new building will cover an aditional 33,600 square feet. The project will provide more production and warehouse space.

East Asiatic Co.
has applied for a forest management license for a district on the west coast of Vancouver Island, B. C. However, the license was rejected owing to the opposition raised by Campbell River groups. Prince Axel of Denmark, representative for the firm, has filed an appeal with the provincial government, but as yet no date has been set for hearing the appeal.

Celanese Corp. of America
will produce yarn at its pulp and paper plant at Prince Rupert, B.C. The plant was originally built for export purposes, but to make the most use of natural resources more integration will be economical. The capacity is to be increased by the end of this year from 200 to 300 tons per day. At present, processing of the Prince Rupert pulp into flake and yarn is to take place at Canadian Chemical Co., Edmonton, a Celanese subsidiary.

Powell River Co.
has presented a total of $6,680 to employees since 1948 in a program designed to reward suggestions for improving operations. The largest single recent award was given to William MacMillan. He received a check for $1,000 for his suggestion of maintaining a proportioning balance between groundwood and sulphite regardless of consistency changes, with use of a constant weight discharge nozzle.

Pulp and Paper Workers
in Canada are the highest paid of employees of major industries, according to the Bureau of Statistics. Their average weekly wage is $57.33. Other representative rates are as follows: iron and steel, $46.25; construction, $45.22; trade, $41.02; finance, insurance, real estate, $34.02, and service, $26.20. The average for all industries is $40.31.

Bowaters Newfoundland Pulp and Paper Mill Ltd.
has announced a $4,000,000 construction and improvement program. Contracts for the work have already been awarded to Terminal Construction Co. of Moncton and Montreal and to Newfoundland Engineering & Construction Co. Ltd., Corner Brook and St. John's.

Canadian International Paper Co.
has deeded a 19-acre site to the Hawkesbury District High School Board, Ont., for $1. A $700,000 school is to be built on the tract.

FOREST PRODUCTS CALCULATOR developed by C&NW determines measurement in cords or board feet for pulpwood, logs, and lumber

"Forest Calculator" Devised by C&NW Railroad

A forest products calculator, devised and published by the forestry department of the Chicago & North Western Railway, has been made available to assist those engaged in the production, harvesting, and shipping of forest products. Given the basic dimensions of pulpwood, logs, and lumber, the user can quickly calculate measurements in cords or board feet.

The calculator is a type of slide rule. If the height or length dimensions of a pile or load of pulpwood are known, the number of cords can be determined. Tables also give the approximate weight of various species of pulpwood, the number of sticks of pulpwood required to make a cord, and the number of trees per cord of wood.

The instrument also calculates the board foot contents of logs of known diameter and length. A lumber scale gives lumber measures in board feet for 26 common lumber sizes in eight different lengths. The calculator is available from the Agriculture and Forestry Department, C & NW, 275 East Fourth St., St. Paul 1, Minn., at a cost of 25 cents.

Customs Court Cases

A test case involving the dutiability of a large number of importations of handmade drawing paper has been decided in favor of the government by the United States Customs Court, according to Warren B. Bullock, manager of the Import Committee of the American Paper Industry. The paper in question is a French product, admittedly handmade, but claimed to be dutiable as drawing paper at 1 cent per pound plus 5 per cent. The paper was classified for duty as handmade paper, and the court sustained this rate of 1½ cents per pound plus 7½ per cent.

Among new cases under investigation are the following: dutiability of foil covered board for heat insulation, handmade photo mounts, Italian decorated paper for box tops or fancy wrapping, self-sticking label paper, and various types of chart paper believed to be dutiable as ruled writing paper.

Nashua Name Change Announced

Stockholders of Nashua Gummed & Coated Paper Co., Nashua, N.H., voted March 27 to shorten the company name to Nashua Corp. According to the announcement, the shorter name was adopted since the products, facilities, and services of the firm have outgrown the value of a descriptive title.

Today Nashua makes many different types of flexible packaging materials and package sealing machines, including

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Diamond Automatic Soot Blowers have been sold for the cleaning of chemical recovery boilers in the following plants. This list covers all but three or four of the black liquor jobs placed in the United States and Canada in recent years. The reason for this overwhelming preference? You obtain correct recovery boiler cleaning and high boiler availability at minimum cost by using Diamond Automatic Soot Blowers.

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Brown Company

Brown Paper Mill Company

Brunswick Pulp & Paper Co.

Cakasieu Paper Company

Camp Manufacturing Company

Canada Paper Company

Cellulosa Koncern (Sweden)

Champion Paper & Fibre Co.
(2 Plants)

Chesapeake Corporation

Companhia Portuguesa de Celulose (Portugal)

Consolidated Paper Company

Container Corporation of America

Continental Can Company

Crossett Paper Mills Ltd.

Crown Williamette Paper Co.

Dryden Paper Company

Enso-Gutzeit Oy (Finland)
(2 Plants)

Fibre Board Products Corp.

Frazer Company, Ltd.

Gaylord Container Corp.

Gulf States Paper Company

Halifax Paper Company

Hollingsworth & Whitney Co.

Hudson Pulp & Paper Co.

International Paper Corp.
Southern Kraft Division
(7 Plants)

Kalamazoo Vegetable Parchment Co.

Longlac Pulp & Paper Co.

Longview Fibre Co.

H. R. MacMillan Export Corp.
Nanaimo Sulphate Pulp Div.

Macon Kraft Company

Marathon Paper Company

Mead Corporation
(2 Plants)

Mo and Donsjo A. B. Husums (Sweden)

National Container Corp.
(3 Plants)

National Paper Corp.

North Carolina Pulp Co.

Oxford Paper Company

Pacific Mills Limited

Rauma-Raahe Oy (Finland)

Riegel Carolina Corp.

St. Helen's Pulp & Paper Co.

St. Joe Paper Company

St. John's Sulphite, Ltd.

St. Mary's Kraft Corp.

St. Regis Kraft Corp.

St. Regis Paper Co.
(2 Plants)

Howard Smith Paper Mills, Ltd.

Sorge Pulp Co., Ltd.

Southern Advance Bag & Paper Co

Southern Paperboard Co.

Thilmany Pulp & Paper Co.

Union Bag & Paper Co.

Union Corporation, Ltd. (S. Africa)

United Paper Company (Finland)

S. D. Warren Co.

West Virginia Pulp & Paper Co.
(2 Plants)

Weyerhauser Timber Co.
(3 Plants)

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First Run of 100% Synthetic Papermarkers' Felt

The first successful run of a papermakers' felt made of 100 per cent synthetic fiber has been announced by F. C. Huyck & Sons, Rensselaer, N.Y. The felt was run in the Camas, Wash., mill of Crown-Zellerbach Corp. on a high-speed Yankee fourdrinier machine producing light-weight papers. Its life substantially exceeded the average on this position, and it gave free drainage throughout its life with no evidence of filling.

William Greeley, vice president of F. C. Huyck, stated that this development is the result of a long-term research program involving many synthetic fibers and manufacturing techniques, and that it is an answer to a definite need in the paper industry. Until recently, wool appeared to be the only fiber providing the peculiar characteristics required. For the past five years felts have been made with a combination of wool and synthetic fibers, but it now appears that all-synthetic felts can be employed for certain uses.

Experiment with Method for Eliminating Sawmill Waste

Experiments were to begin recently in Warren, Ark., with a machine designed to eliminate sawmill waste and provide more pulpwood for paper manufacture. The machine, imported from Sweden at a cost of about $100,000, debarks logs, thus providing more slabs and chips.

According to W. R. Warner, general superintendent of Southern Lumber Co., "if all sawmills in Arkansas were to install these debarkers, enough waste material would be salvaged to meet the needs of possibly two more paper mills in the state."

Operation

The Swedish machine is pneumatic in operation and is the first of its type to be brought to North America. The logs are washed clean as they move along a conveyor chute to the mill and are rolled automatically in the debarker. They are stripped of bark, which falls onto another conveyor and hauled to the boilers for use as fuel. The clean or debarked logs are then carried to the saw wheels.

Under the debarker machine process, the clean slabs are conveyed to a machine that chips them into uniform size for use as pulpwood. Thus, practically all the log is utilized. The debarker has a housing that supports a large ring that revolves about the log as it enters the machine. Within the ring are six tools and actuating pistons spaced at equal distances. Each tool presents an angular face to the direction in which it and the log are being moved against each other. The actual debarking is a shearing process. Pressure applied against the tools is sufficient to prevent the tools from sliding over the bark.

Outlook in Wastepaper Market Brightens

An improvement in demand during the second quarter is expected by the wastepaper industry. Spearheading the trend is a rise in orders for paperboard. During the first two weeks of March new orders for paperboard exceeded those of the corresponding period in February by a little more than 13 per cent.

According to the industry, the increase in paperboard orders is indicative of a future trend. Manufacturers of paperboard consume between 70 and 80 per cent of the nation's total consumption of wastepaper.

Other factors in the general situation include the possible lifting of restrictions on new building within a relatively short time, creating a greater call for roofing materials and building boards. While mill inventories of wastepaper are still large, they have been reduced by about 11 per cent since the first of the year.

Sulphite-Burning Method Revealed as . . .

Progress in Stream Pollution Fight Continues

Burning calcium-base waste sulphite liquor without the use of auxiliary fuels is now a reality. This was revealed March 25 by H. A. Sorenson of Washington State College, as he addressed the spring meeting of the American Society of Mechanical Engineers at Seattle. The new method as reported by Mr. Sorenson may solve the disposal problem being tackled by paper mill operators throughout the country.

According to Mr. Sorenson, a mechanical engineer associated with the Division of Industrial Research at the school, stable combustion of the liquor has been maintained in an uncooled refractory-lined furnace that was preheated, using waste sulphite liquor preheated by a steam coil in the bottom of the storage barrel. A combustion efficiency of 76 per cent was obtained, which the researcher said was low but could be substantially improved by furnace redesign.

Burning is considered the answer to the serious problem of sulphite waste liquor disposal, but to date only a small fraction of this paper mill by-product can be effectively and economically utilized in this manner. The paper read by Mr. Sorenson incorporates the findings resulting from a study of the combustion of sulphite liquor initiated at Washington State in July 1950. The conclusions reached are applicable only to a refractory-lined furnace. The study reveals that combustion of the waste in a water-cooled furnace would be dependent on the use of a piloting fuel, such as coal or oil.

Chamber Construction

The shell of the combustion chamber constructed at Washington State was made of sheet steel in the form of a horizontal cylinder 8 feet long and 3 feet in diameter. A course of insulating brick and a course of firebrick was laid inside the shell, producing a combustion space approximately 23.5 inches in diameter. The outlet end was partially closed with firebrick, and a sheet metal plate was attached to the inlet end of the furnace.

A conventional-type oil burner was attached to this steel plate. A steam-atomizing oil burner nozzle was installed for firing the waste sulphite liquor. The burner, an internal atomizing type, is rated at 10 gph (oil) with an operating range of 40 to 200 per cent of rated capacity. Compressed air, instead of steam, was supplied as the atomizing medium.

A burner head was constructed for operation with the atomizing nozzle. Spinning vanes were machined and inserted in the head in an effort to provide turbulence and mixing of the air and fuel in the ignition zone. Combustion air was supplied by a centrifugal blower.

The burner was calibrated against inlet air pressure for the flow of atomizing air while flat plate orifices were used to measure the flow of both the oil and sulphite liquor burners. A gear pump delivered the sulphite liquor to the burner through a regulating system installed to control pressure and flow. Weigh tanks were used to determine the consumption of both fuels.

The waste sulphite liquor was preheated by placing a steam coil in the bottom of the storage barrel. For a concentration of 50 per cent solids, the viscosity of the liquor is reduced from 147 Saybolt seconds at 123F to 54 seconds at 199F. Preheating improved atomization and allows greater ease in pumping and controlling the liquor.

Initial firing of the furnace immediately presented the problem of con-

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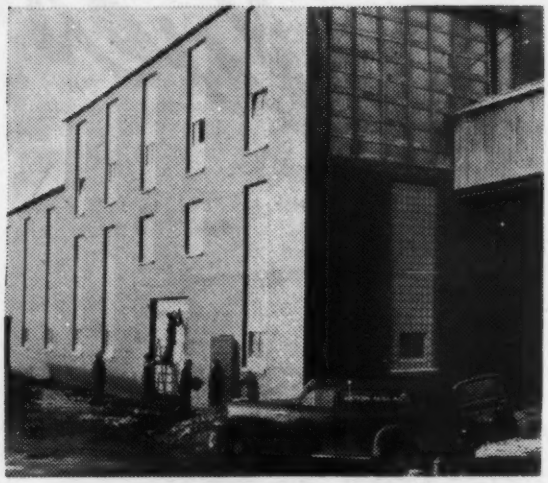

BUILDING constructed by Northern Paper Mills to house equipment fan evaporation and burning of spent sulphite liquor. Completed in February, operation is delayed because of government restrictions

ducting the gases from the furnace outlet. The discharge of fly ash from the open end of the furnace made operation impossible because of the nuisance so created. A cyclone separator was installed at the base of a 16-foot stack 20 inches in diameter. To protect the sheet metal cyclone from the effects of the high-temperature gas a water-cooled heat exchanger was installed essentially at the furnace outlet. Actually, a transition cone was placed between the end of the furnace and the heat exchanger. The cone, a jet engine exhaust nozzle constructed of alloy steel, is capable of withstanding the effects of high temperature.

Furnace operating procedure consisted of oil-fired preheating for approximately one hour, followed by cutting in the sulphite liquor burner. It was soon discovered that oil firing was not required for pilot ignition, and combustion could be readily maintained with sulphite liquor fired alone. Furnace conditions were quickly stabilized and with equilibrium established furnace outlet temperature remained constant.

Observations made through peep holes showed the sulphite liquor to be burning with a long, orange-colored flame of medium brightness. In the essentially non-turbulent atmosphere of the furnace the paths followed by the glowing particles were readily traced. Some of the articles were observed to impinge against the lower end wall and fall to the bottom of the furnace where combustion continued.

Operation at the higher firing rates caused the combustion process to continue beyond the furnace into the transition cone. As a result, the metallic walls of the cone reached a temperature ranging between 700 and 900F. Obviously, a very high heat loss occurred in this section. Burning within the cone is attributed to the long-flame pattern produced by the burner.

At the conclusion of the preliminary firing period, required for making adjustments and changes in the equipment, five test runs were made.

Test Data

Neither the furnace construction nor instrumentation employed for this preliminary investigation of the problem was intended to permit an accurate evaluation of combustion performance. Thus, owing to indefinite correlation, the data recorded during the five test runs were not presented for analysis.

However, from a critical examination of the data it may be concluded that for a single run fair consistency exists. The following data were given to indicate approximately the combustion characteristics of the experimental furnace fired with waste sulphite liquor:

Firing rate	4.44 lb./min.
Concentration of liquor	55 per cent solids
Per cent of theoretical air	125
Corrected furnace outlet temperature	1880F
Theoretical furnace outlet temperature	2440F
Approximate combustion efficiency	76 per cent

Furnace efficiency was arbitrarily taken as the ratio of the actual temperature rise, inlet air to outlet gas, to the calculated corresponding temperature rise based on theoretically complete and adiabatic combustion, neglecting the effect of dissociation.

A combustion efficiency of 76 per cent is definitely low and indicates incomplete combustion of the fuel. The high percentage of combustible material found in the flue dust removed by the cyclone separator provides additional evidence pointing to incomplete combustion. An analysis of the test data shows that a substantial gain in combustion efficiency can be expected through elimination of this principal loss.

It is apparent that an increase in the length of the refractory-lined section of the furnace will permit completion of the combustible process, since quenching owing to heat loss from the uninsulated section will be eliminated. However, an increase in furnace length will result in awkward proportions for the structure, hence a redesign of the firing equipment would appear to be preferable. An attempt would be made to produce a shorter and more intense, turbulent flame in place of the long flame obtained with the present firing equipment.

Wisconsin Research Progress Report

Mills in Wisconsin, under the leadership of the Sulphite Pulp Manufacturers' Research League, have taken substantial steps to solve the state's stream pollution problem. Every day new possible uses for waste sulphite liquor are being developed and tested; and reports on the progress accomplished made available to the industry.

Consolidated Water Power & Paper Co., Wisconsin Rapids, has announced that alterations are now under way at its sulphite pulp mill as a part of a company program to permit cutting stream pollution at an expense that can be economically supported. The firm is going ahead at a cost that will reach $50,000 for the current improvements, and eventually expects to add another $100,000 worth of equipment to the installation.

The purpose of the project is to collect spent sulphite liquor that contains the maximum proportion of solids and therefore the minimum proportion of water. The greatest single cost in the evaporation and burning process using spent liquor comes from the cost of boiling the water out of the liquor. If Consolidated can collect liquor of 15 per cent or more solids content as it comes from the blowpit, instead of the ordinary 10 per cent solids content, the necessary investment in evaporation equipment, as well as in fuel, will be greatly reduced.

The first stage of the program, which has been under way for several months, is to make major alterations in each of the mill's eight digesters as they shut down for relining. These alterations are to be followed by installation of internal heating systems so that it will no longer be necessary to flow steam into the digester and thus dilute its contents with water condensate. After the installation is complete, it will be possible to use spent sulphite liquor to replace some of the fresh liquor in which the wood chips must be cooked.

Northern Paper Mills, Green Bay, recently made public a detailed report to state authorities on what the firm has accomplished in its plans to evaporate

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and burn spent sulphite liquor at its pulp mill. Delaying the project are defense shortages of critical materials.

According to the report, the building that will house the evaporator is now completed. Work was started on the structure last fall and finished in February. It was scheduled thus to be ready for the installation of evaporator units, which the fabricator had promised for April delivery. The fabricator has since revised his delivery promise to sometime between October 1 and December 31, 1952. It will be several months after delivery is made before the evaporator can actually be installed and put to work concentrating sulphite liquor for burning as industrial fuel. Delivery dates for stainless steel are delaying the entire operation.

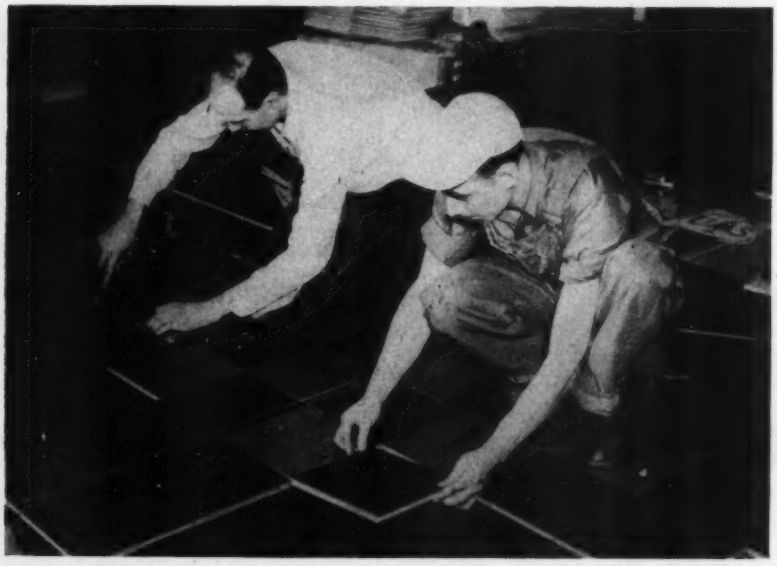
Northern also needs a new boiler to burn the evaporated sulphite liquor. The report shows that the boiler fabricator promises that in June this will be delivered and ready for installation. Estimated installation time is another six months.

Monsanto to Convert Sulphite Waste to Vanillin at Seattle

Monsanto Chemical Co.'s Seattle, Wash., plant addition to convert the waste sulphite liquor of the Puget Sound Pulp & Timber Co. into vanilla extract —technically "lignin vanillin"—was to be ready for operation April 15.

A skilled technical staff will initiate the entrance of Monsanto's Seattle Division into this venture. The sulphite liquor will be semi-refined in Seattle and then sent to the St. Louis, Mo., plant for further refinement and marketing. The end product is to be marketed as vanilla extract, as well as for use in the manufacture of candy, ice cream, etc.

While the manufacture of vanilla from forest products is not new, the Seattle operation is considered a decided advance over existing processes and is expected to result in a superior product at less expense. The new operation involves an expenditure of almost $100,000,000 for the construction of additional projects and the completion of current ones.



NEWLY DEVELOPED paper-plywood floor being put down at the U. S. Forest Products Laboratory

Paper-Plastic-Plywood Floor Tested in Wis. Laboratory

What is probably the largest paper-plastic and plywood floor in the world is being tested in the main lobby of the U.S. Forest Products Laboratory in Madison, Wis. The wearing surface of the newly developed flooring is actually a thin skin of resin-treated paper that is much harder and several times more scuff-resistant than other flooring manufactured from forest products.

The material was made at the Laboratory by gluing thin skins of the plastic to five-ply Douglas fir plywood. The top skin is 0.09 inch in thickness. A thinner skin is glued to the under side of the panels to insure the high dimensional stability of the floor. This type of flooring is still in the experimental stage and is not made commercially.

R. J. Seidl, Laboratory paper chemist, reports that the product owes its high strength to the type of paper used and its hardness to the synthetic resin incorporated in the paper. It is also resistant to moisture. The plastic is made by pressing numerous sheets of resin-impregnated paper at high temperatures into thin sheets of solid plastic. The product is the result of research conducted during World War II to find a substitute for sheet metals. Called "papreg" by the Laboratory, it was used for airplane parts such as gunner's seats and turrets, wing tips, and flooring.

The experimental floor was installed with the cooperation of the Douglas Fir Plywood Association, Tacoma, Wash., which furnished the plywood; the Consolidated Water Power & Paper Co., Wisconsin Rapids, which manufactured the plastic surfacing, and the Union Carbide & Carbon Corp., New York, N.Y., which supplied the resin.

The papreg-plywood panels were cut into 10½" square tiles, fitted with tongue-and-groove joints, and laid in tile cement on a concrete subfloor. The tiles were merely set in place and then tapped firmly to set the joints. More than 1,500 square feet of tile was laid in a checkerboard pattern of light brown and Forest Service green.

Crown Willamette School to Achieve State Status

The Crown Willamette Paper School, for the past 19 years conducted at the Camas (Wash.) mill of Crown Zellerbach Corp., has been designated as a graduate school within the educational structure of Oregon State College. In announcing the merger, Dean G. W. Gleeson of the School of Engineering and Industrial Arts at Oregon State declared that the new cooperative arrangement has been approved by the Graduate and Faculty Councils and now awaits endorsement by the Oregon State Board of Higher Education.

According to Dean Gleeson, the program provides a means of up-grading technical employees during a period of critical shortage in that field. Cooperation of educational programs between colleges and industry are quite common, but so far as is known the Crown Willamette School graduate program is unique in that it is an outgrowth of the successful efforts of a company-sponsored school.

Masters' degrees obtainable under the advanced industrial school program will include civil, electrical, mechanical, chemical and industrial engineering, and the sciences. Qualifications for enrollment are that the applicant must have a Bachelor's degree, be an employee of Crown Zellerbach, be accepted by Oregon State College, and be enrolled in the Crown Willamette Paper Graduate School.

Three-Phase Curriculum

One-third of the graduate work will be in pulp and paper technology, including an on-the-job thesis on a plant problem or project. The thesis will be under the joint supervision of the faculty of the Paper School and a member of the appropriate department at Oregon State.

One-third of the work will be by extension courses from the College, carried on either at Camas or at other C-Z operations or within travel range of the Paper School. Extension work may be in either the major or minor fields of study. Non-degree students may participate in either the Paper School courses or courses under extension.

The final requirement is a three-month residence and study on the Oregon State campus, normally the last third of the degree program. Minimum time requirement for the attainment of a Master's degree will be about 3½ years, with a maximum limit set at seven years. When approved by the state board, the industrial graduate school will go on the same quarterly system as the College. It was to enroll employee-students for the spring quarter of this year, beginning about April 1.

Established "by Demand"

The Paper School was founded by the management of the Camas mill 19 years ago as a result of requests from employees for courses of instruction designed to broaden their knowledge of the pulp and paper industry and to keep them current on technological advancements and new products.

Since its founding, the school has graduated 2,734 students in the four classes and this year graduated 14 seniors and 169 in the first, second and third year classes. Students attend sessions one or two nights weekly for 19 weeks each semester. Instruction is based on the practical know-how of management, supervisory and technical people who comprise the faculty. Visiting lecturers represent a wide range of college, paper mill, and supplier industries.

A. G. Natwick, assistant resident manager at Camas, has been dean of the School since its inception. While he is on leave serving in Washington, D.C., in the pulp section of NPA, Principal W. C. Jacoby is acting dean.

Western Michigan Adds to Faculty

Three chemists associated with Kalamazoo Valley paper mills have been added to the group of special lecturers in the pulp and paper curriculum at Western Michigan College, Kalamazoo. The announcement was made by Dr. Gerald Osborn, head of the chemistry department.

Joseph Chatterton of Kalamazoo Vegetable Parchment Co. will lecture on paper testing. Wilbur Kite of Lee Paper Co., Vicksburg, will conduct work in coloring and filling. And William Dohne, Hawthorne Paper Co., will assist students in assembling and correlating data for theses.

INK RUB TESTER being presented to O. W. Callighan (left) for Western Michigan College; the donor, Sutherland Paper Co., is represented by Martin J. Galbraith, technical director

W. Michigan College Receives Ink Rub Tester

Sutherland Paper Co., Kalamazoo, Mich., recently presented to Western Michigan College a Sutherland ink rub tester for use in its laboratories. The tester is designed to evaluate the scuffing or rubbing resistatnce of an ink film on paper or paperboard. Among the tests that can be made are the following: dry rub, wet rub, wet bleed or transfer, wet smear, and functional rub.

O. W. Callighan, chairman of the equipment committee of the curriculum's advisory board of the college, received the tester for the school and in turn passed it on to Dr. Alfred H. Nadelman, who is in charge of the pulp and paper curriculum. The original presentation to Mr. Callighan was made by Martin J. Galbraith, technical director for Sutherland.

The tester, according to Mr. Galbraith, was developed after about a year of experimentation by the Sutherland technical staff as a means for accurately testing the resistance of inks on printed cartons to rubbing.

Price Agreement Sought as Newsprint Production Increases

Rep. Lindley Beckworth (Dem., Texas) recently asked Price Director Ellis Arnall to seek an understanding with Canadian officials not to raise Canadian newsprint prices without prior consultation with United States Officials. Rep. Beckworth is chairman of a House subcommittee on newsprint.

In a letter to Mr. Arnall, Rep. Beckworth said his group had heard "reports of rumors that the Canadian newsprint manufacturers or some of them were considering another increase in their prices.

"Our committee has not received information," the letter continued, "that would seem to justify a further price increase, and we are aware that an appreciable increase would have a serious effect on many of our country's newspapers."

Temporary Easing

In February J. Noel Macy, chief of NPA's printing and publishing division, reported a "temporary easing" of the nation's newsprint shortage, but warned that world demand will exceed available supplies for many years. He told the subcommittee that publishers and printers got 81,792 more tons of newsprint than they used last year.

Inventories thus were increased to their "historical average," he said. Supplies will be even larger this year, he added, but spot shortages will continue.

Mr. Macy reviewed recent activities of DPA whereby tax amortization certificates have been or will be granted to six firms for expansion of their newsprint

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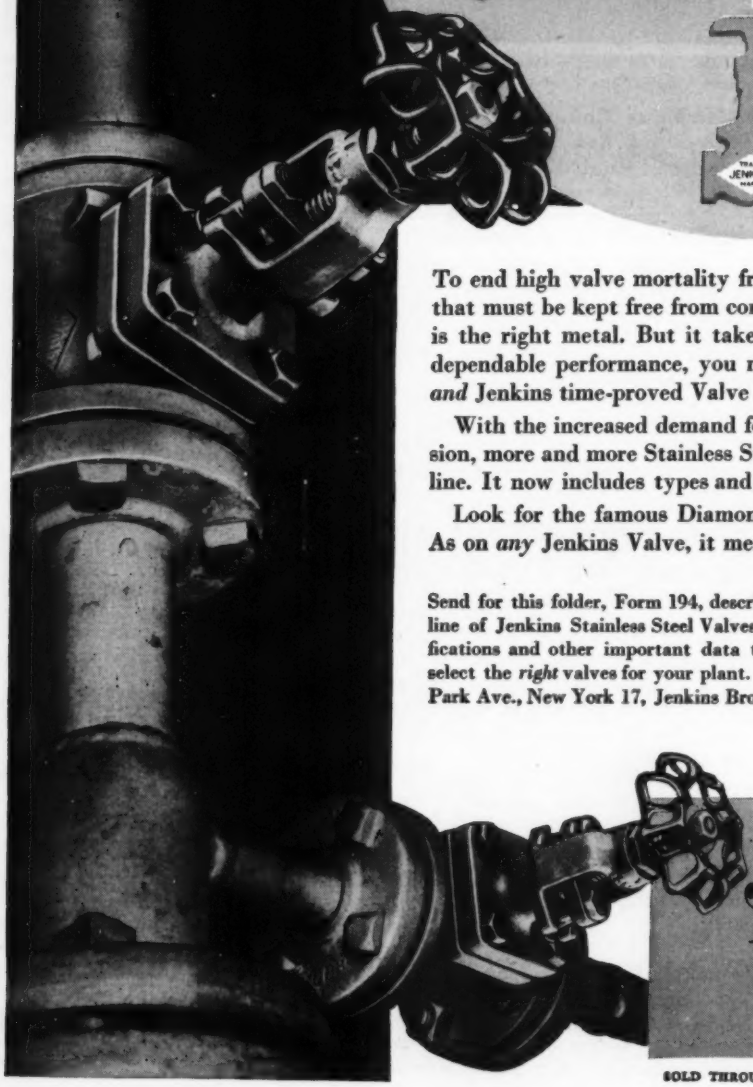

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production facilities to produce an additional 256,000 tons a year. Bowater Paper will build a new plant at Charleston, Tenn. Expanded will be the facilities of Great Northern Paper Co., Millinocket, Maine; Michigan Paper Co., Plainwell, Mich.; West Tacoma Newsprint Co.; Southland Paper Co., Lufkin, Texas, and Crown Zellerbach Paper Co., San Francisco. Mr. Macy added that Canadian newsprint production also will be increased by 150,000 tons this year.

Pinch Seen Easing In Canada

British Columbia newsprint producers, whose principal market is in the United States, have recently reported a buyers' market. The slack in demand has combined with a large increase in production to create a surplus.

There have been no drops, however, in the contract price of newsprint. The Vancouver price is $115 a ton and in New York, N.Y., $116. A year ago newsprint purchased outside contracts would bring as high as $300 a ton, but it is now reported to have dropped to around $180. Some sales outside North America have been made at $500.

Eastern Canada Not Affected

At the same time reliable sources in eastern Canada foresaw no comparable situation. Officials declared that there are still long waiting lists for eastern Canadian newsprint; and figures showed that exports of both pulp and newsprint were up last month as compared with both the previous month and the same period a year ago.

In its monthly report, the Canadian Pulp and Paper Association declared that production of all grades of pulp except unbleached kraft showed an increase in January this year over January 1951.

800 Small Dailies Near Death, Lack Paper

A recent survey has shown that more than 800 of this country's small weekly newspapers are in dire straits because of a severe shortage of newsprint. They were kept alive last year—and will survive 1952—only because 15 large dailies diverted to them part of their own newsprint supplies.

According to NPA, no publication has as yet had to shut down. However, their usefulness has been seriously curtailed, and some have been forced to print on wrapping paper. The diversion of paper was arranged when the large newspapers agreed to transfer to paper merchants part of the newsprint supply for which they held contracts.

The shortage has been particularly severe with small weeklies, whose supply generally comes from jobbers and dealers, whereas large papers make contracts directly with the mills. Because of unprecedented world-wide demand, mills have been hard pressed to keep dealers supplied.

February North American Newsprint Output at Record

Production in Canada (including Newfoundland) during February amounted to 457,835 tons and shipments to 441,349 tons. Output in the United States was 94,759 tons, and shipments were 96,982 tons, making a total North American production of 552,594 tons and shipments of 538,331 tons; this compares with continental production of 509,716 tons and shipments of 485,967 tons in February 1951. Total output in February 1952 exceeded that in any February on record. The figures were released by the Newsprint Service Bureau, New York, N.Y.

The Canadian mills produced 50,175 tons more in the first two months of 1952 than the corresponding period of 1951, which was an increase of 5.7 per cent. The output in the United States was 14,397 tons, or 8.1 per cent, greater than that in the first two months of 1951, making a total continental increase of 64,572 tons, or 6.1 per cent, more than in the comparable period of 1951.

Stocks of newsprint paper at the end of February were 143,640 tons at Canadian mills, and 7,515 at United States mills, making a combined total of 151,155 tons. This compares with the 136,892 tons on January 31, 1952, and the 150,508 tons at the end of February 1951.

Newsprint Navigation on Lakes Opens Early

The earliest opening of navigation for the newsprint fleet operated by the *Chicago Tribune* was marked March 27, when the motorship *Chicago Tribune* sailed from Thorold, Ont. The previous record date was April 1, which was established in 1945.

The ship, carryiing a cargo of 3,305 net tons of paper, was to refuel at Sarnia. The scheduled running time for the voyage is four days and nine hours. She was to be followed on the trip by the *S. S. Outarde,* carrying 2,354 tons, and the *S. S. Heron Bay,* laden with 3,400 tons.

Newsprint Notes

Newsprint Leads
in value Canada's 16 leading export commodities. In 1951 the value of newsprint exported was $536,372,000. Other representative products included: wheat, $441,043,000; wood pulp, $365,133,000; planks and boards, $312,198,000; nickel, $136,689,000; other grains, $129,214,000; aluminum and products, $124,779,000; fish and products, $117,464,000; wheat flour, $113,854,000, and farm implements, $106,438,000.

Canada's Newsprint Exports
in January 1952 jumped to $47,200,000, compared with $40,700,000 in the corresponding period last year.

Venezuela Newsprint
is a distinct possibility. According to a preliminary survey by the Ministry of Agriculture, the naton grows many trees that could provide the requred raw material. Seeking newsprint independence, the government will set up an experimental laboratory at Los Andes University to test the various woods.

Chile's Government
has approved plans to construct a newsprint mill capable of producing an annual 50,000 tons. Private U.S. investors will finance the construction and operation of the $10,000,000 plant.

Brazilian Newsprint
consumption increased in 1951 by only 10,000 tons, instead of the 30,000 expected, because of supply difficulties.

Swedish Publishers
are feeling the pinch of the newsprint shortage. Paper production is lagging, while prices are rising. The ever-growing demand is the principal cause of the shortage. Consumption last year totaled 113,000 tons, compared to 151,000 tons in 1938.

Mexico's Minister
of hydraulic resources has announced that the government intends to build a newsprint mill and an aluminum factory in the Papaloapan area south of Vera Cruz.

West Berlin Newspapers
have discontinued their Sunday pictorial sections because of the shortage and rising price of newsprint.

Per Capita Newspaper Buying
in Denmark leads all other countries, according to a report by UNESCO. Although the United States consumes 65 per cent of the world's newsprint, Denmark has the largest proportional newspaper circulation—399 copies per 1,000 inhabitants, compared to a ratio of 354 per 1,000 in the U.S.

Part of Gaylord Fortune Left to Charity

Part of the fortune left by St. Louis multimillionaire Clifford W. Gaylord, who was president of Gaylord Container Corp., is to be used for "religious, charitable, scientific, literary, or educational purposes solely in the state of Missouri."

The estate, thought to exceed $14,000,000, will provide, according to the will,

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Announcing . . The 6" VORTRAP

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Featuring

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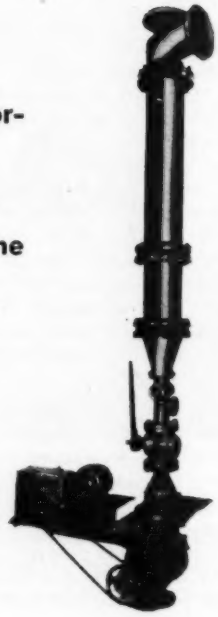
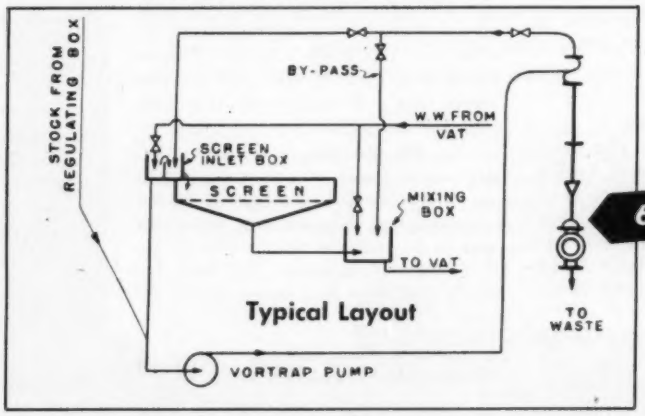
   - (a) Upgrading of stock.
   - (b) Decreased shut down labor—fewer screen washups.
   - (c) More production.
   - (d) Increased wire-felt-equipment life.



6" Vortrap with Automatic Rejects Valve

Write for Sales Bulletin No. 11.



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for the Clifford Willard Gaylord Foundation, created in 1948 as a charitable trust. Half the estate is left in trust for the widow, Mrs. Catherine Manley Gaylord. The foundation is to receive 40 per cent of the remainder of the estate in excess of $2,000,000 after specific bequests to a number of employees.

Paper Industry Labor News . . .

Southern Pulp Plant Workers Get 5-Cent Hike

The regional Wage Stabilization Board in Atlanta recently approved a 5-cent per hour wage hike for 12,733 pulp and paper workers in four southeastern states. The employees are represented by the AFL and CIO in 18 plants.

In granting approval the board took note of the action taken by International Paper Co., pacesetter for the field. International negotiated a new contract with the unions June 1, 1951, calling for an 8-cent per hour increase. At that time, only 3 cents of the new wage level was permissable under wage board rulings. The recent decision granted the additional 5 cents, retroactive to June 1. The 18 plants are located in Alabama, Florida, Georgia, and South Carolina.

International Paper Co.
has granted a 4-cent per hour wage increase to 3,000 employees in six mills. The mills affected are at Niagara Falls, Tonawanda, Palmer and Ticonderoga, N.Y.; York Haven, Pa., and Otis, Maine. The raise is subject to approval by the WSB.

Int. Brotherhood of Papermakers, AFL,
recently lost a collective bargaining election by 11 votes at the four New Jersey mills of Riegel Paper Corp. The workers are not represented by any union.

Nekoosa-Edwards Paper Co.
employees were recently granted a 2.15 per cent wage increase by the WSB. The raise is retroactive to June 4.

Approximately 1,500 Workers
returned to their jobs recently at Southland Paper Mills in Lufkin, Texas, after a one-day work stoppage.

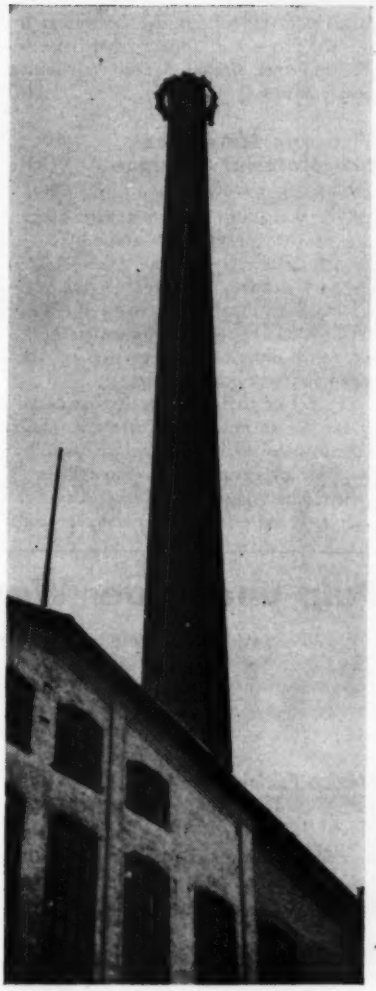
Munising Paper Co.
workers were recently granted four paid holidays a year by the Michigan WSB. Employees of the paper firm will receive eight hours straight time pay for each of the four days, and these holidays will be considered days worked in computing weekly overtime pay.

360 Employees
of four Minneapolis and five St. Paul firms that are members of the Twin Cities Box Manufacturers Association were recently granted wage increases of 2.8 per cent by the regional WSB. The action is retroactive 60 days.

Wage Increases in Excess
of the ceiling for employees of Columbia Box Board Mills, Chatham, Mass., have been approved by the WSB on the firm's claim that the action is in recognition of the workers' increased productivity and are not inflationary.

Wage Increases Ranging
from 4½ to 8 cents an hour for more than 800 employees of Haloid Co., Rochester, N.Y., photographic paper and chemical manufacturer, have been announced.

Alton Box Board Co.,
Alton, Ill., has withdrawn its suit charging two labor unions with violating the Taft-Hartley Law. The firm had



LANDMARK at KVP as it appeared before it was demolished last month

STEEPLEJACKS who worked on the demolition job demonstrate mode of travel to top

KVP Razes Kalamazoo Landmark

Out of use since 1928, the old natural draft concrete chimney of Kalamazoo Vegetable Parchment Co. is coming down. The work was to be completed in March on the 285-foot landmark. Because the stack, constructed in 1917, was in the middle of the sprawling KVP installation it couldn't be felled in the usual manner, but had to be dismantled brick by brick.

Four steeplejacks were hired to do the job and attacked the task with sledge and air hammer, dropping each piece down the inside of the stack. It was estimated that it would take six weeks to complete the work. The walls of the structure were 17 inches thick at the base and four at the top.

charged that Local 525 of the International Brotherhood of Teamsters and Chauffeurs set up an illegal picket line, and that the independent Alton Paper Workers Union had refused to cross the line, forcing the plant to close from February 2 to 8.

Forest Income Estimated at $12 Million

Profit of $12,000,000 on timber sales by the U. S. Forest Service during the year ending June 30 has been estimated by the assistant chief, Earl Loveridge. He recently reported to a house subcommittee on agriculture that the cost of maintaining the 73,000,000 acres of commercial forest land under the service's jurisdiction will be about $53,000,000, while receipts will amount to approximately $65,000,000.

Mr. Loveridge drew a comparison between the present financial return and that of 1941, when receipts amounted to only $7,000,000. In that year the timber cut was 2 billion board feet. The cut this year will exceed 4½ billion feet.

The subcommittee was also told that the costs of fire protection and fire fighting have gone up tremendously in recent years. Edward P. Cliff, another assistant chief, said the fire protection service is "trying to do now a 10,000-man job with 6,000 men."

"Smokey Bear" Not Commercial

The Senate recently ruled that the "Smokey Bear" insignia used by the U.S. Forest Service as a symbol of fire prevention should not be exploited for commercial purposes. Clad in a forester's hat and blue jeans, Smokey Bear has been used for some years by the U.S.F.S. in its conservation programs. Without dissent the Senate passed and sent to the House a bill to make unauthorized use of the symbol illegal. Violators would be subject to a fine of $250.

Pulp Needs Revive Timber Cut in Big Horns

The needs of mills in Wisconsin have caused renewed activity in the Big Horn National Forest of Wyoming, where woodsmen are currently working a stand of lodgepole pine in an area cut over by timbermen more than a quarter century ago. This pioneering pulpwood operation, the only one in Wyoming, was begun 11 months ago by Buffalo Pulpwood Co. Still in the experimental stage, the firm has harvested and shipped 58 railroad cars, or about 1,450 cords.

The stand now being cut is yielding about 20 cords to the acre. According to the Forest Service, there are an estimated 100,000,000 cords of pulpwood on the forest, although much of it is inaccessible. However, pending further research and survey work, it appears that there is a 20,000-cord annual harvest available for a continuing operation.

Wisconsin Mills Face Raw Material Shortage

Representatives of wood-using industries in Wisconsin have met with members of the conservation committee of the legislative council in Madison to discuss a growing shortage of raw materials. They explained that, if Wisconsin wants to see such industries prosper, more must be done to step up the productivity of forest lands.

Typical of the problems is that faced by the paper industry. Currently, some three-fourths of the raw material—pulpwood or processed pulp—must be imported. The high transportation costs for such raw material, mill owners report, put Wisconsin installations at a disadvantage in competition with mills that can get all their needs near at hand.

It has been reported that, in addition to the high costs of transportation, Canada, Minnesota, and southern states may place special taxes or restrictions on exports of raw materials for processing elsewhere. That might offer further inducement to wood using industries to move into those states and Canada.

To meet the critical situation, Wisconsin mill owners are attempting in every possible way to increase forest land productivity within the state. They are buying forests and undertaking extensive tree-planting projects. They are sponsoring better forest management through the hiring of trained foresters. And they are attempting to convince private landowners of the benefits to be gained through the Tree Farm programs.

Pulp and Paper World Report

Expansion and modernization throughout the world have helped not a little in battling the global paper shortage. However, greatly increased consumption—both civilian and governmental—has stepped in to make progress seem insignificant. In 1900 American per capita consumption was about 60 pounds annually. By 1939 it had grown to 244 pounds, and currently it is estimated at more than 400 pounds.

Mexico Facing Paper Deficit

While paper production has doubled in Mexico in the last 10 years, consumption has also increased enormously. The country has a large paper deficit, and this has made it necessary for the government to set up special importation subsidies. To this end, the Departments of Economy and Treasury have worked out arrangements for the importation of newsprint and the prime materials for the country's own paper industry.

According to government data, production of printing paper was 18,444 tons in 1939 and 22,725 in 1950; writing paper, 3,558 and 9,177; book paper, 2,500 and 6,000, and other types, 1,899 and 8,000.

The problem of supplying the national market has brought into being new plants such as Titan of Monterrey for corrugated paper, another at Puebla producing cardboard, and a third at Tlalnepantla, which manufactures toilet paper.

The official government finance department has been studying for some months the establishment of a cellulose plant in Michoacan for the production of 35,000 to 40,000 tons of cellulose pastes. The same agency has also under consideration the installation of another plant in San Andres Tuxtla to utilize bamboo in the production of 60,000 tons of newsprint annually.

Belgian-American Interests to Build African Mill

The Belgian Congo's first paper mill is in the planning stages. A Belgian-American financial and industrial syndicate has been organized to construct the plant, after extensive surveys showed that ample raw materials and power and water supplies are available.

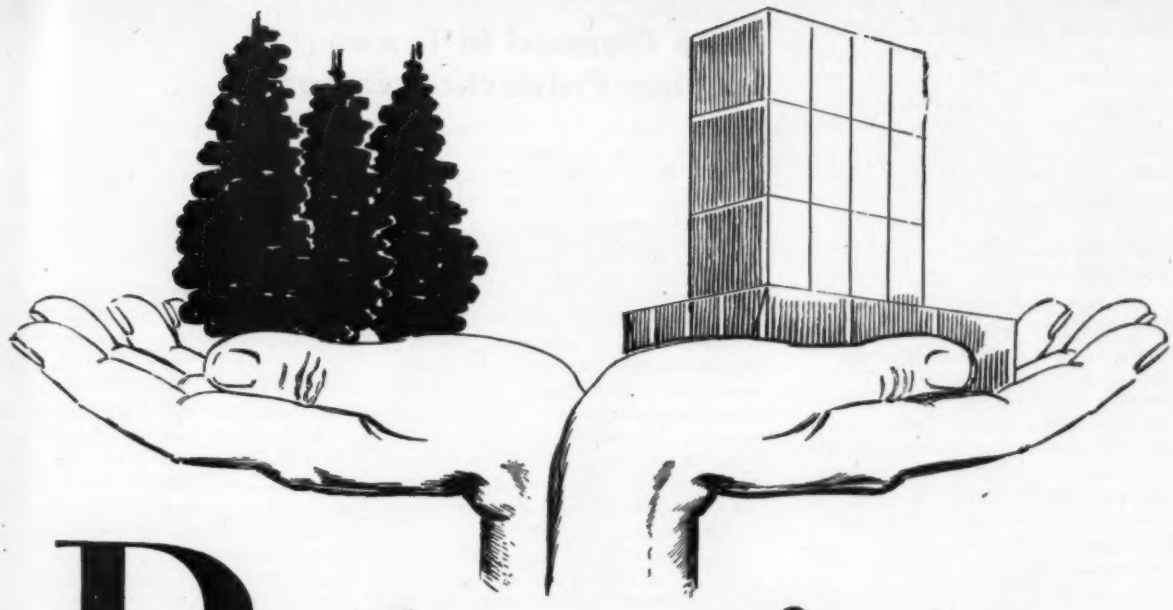
American interests in the proposed undertaking are headed by Lawrence Ottinger, president of United States Plywood Corp., who has handled the negotiations to date. Belgian interests are represented by Agrifor (Societe Forestiers et Agricole du Mayumbe), a Belgian enterprise with extensive and varied operations in the Congo. Martin Theves, president, and Baron de Steenhault de Waerbeek, chairman of the board of Agrifor, have recently been in the U.S. conferring with their American colleagues in the project.

The Belgian government is extending full cooperation by offering extensive tracts of timber to encourage the mill construction, which it sees as the forerunner of industrial development in the area, as well as an aid in clearing land for cotton cultivation by the natives. Additional sources of pulpwood are anticipated from Portugese West Africa.

Scandinavian Pulp Price for Britain Cut

Wood pulp manufacturers in Sweden, Norway, and Finland have agreed to scale down their prices to the maximum set by Britain as a condition for granting them import licenses. Those three countries are England's biggest suppliers.

The prices are about 20 per cent be-



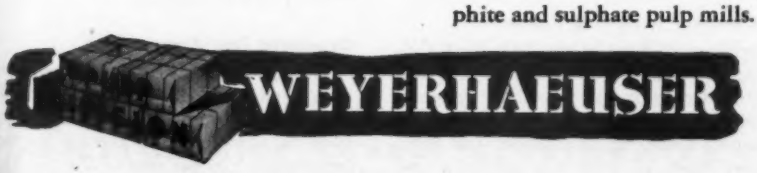
Balancing

TIMBER RESOURCES WITH PRODUCTION REQUIREMENTS RESULTS IN A PERMANENT FOREST INDUSTRY

ONE OF the primary factors in the sustained production of forest products is the balancing of timber supply and plant production requirements. On the face of it, a simple enough statement; but in actual practice a highly integrated operation coordinating harvesting operations both in time and quantity with the production requirements of lumber, pulp, plywood and other types of plants and mills.

The Weyerhaeuser forestry policy is now being projected for the next 100 years. Tree farming, inaugurated in the United States by Weyerhaeuser in 1941, protects the timber from fire, bugs, and disease. Planned harvesting, including pre-logging, clean logging and re-logging, then directs and increases the utilization of the trees grown.

This farsighted forestry policy insures a continuing supply of pulpwood for the Weyerhaeuser sulphite and sulphate pulp mills.



low previous levels and mean that British paper mills will be able to manufacture newsprint more cheaply. Foreign ministers of the three Scandinavian countries involved have attacked Britain's "unilateral action," hinting that they will make retaliatory cuts in their imports from Britain.

Japanese Paper Mills Seek Alaska Timber

Japanese paper mills have proposed that a team of Japanese laborers be allowed to enter Alaska to cut timber for shipment. According to the Kyodo News Agency, mill operators expect stiff opposition to their plan from both the United States and Alaska; however, they are purported to have delegated a prominent Japanese industrialist with many contacts in the states to press the plan.

Originally, the paper mills had hoped to import wood from Sakhalin Island, but the barter deal fell through because of a Soviet demand for strategic materials.

Forest Fire Insurance

is growing in popularity in Sweden. More than three-fourths of the country's forest land is now covered, in spite of the fact that only about one acre in 5000 is burned each year. The annual fire insurance premiums per $1000 valuation are $3 for plantations, $1.25 for young forest, and 60 cents for forest approaching maturity.

Taiwan Paper Corp.,

Formosa, has announced that paper production for 1951 exceeded original quotas. It was reported that up to last Christmas 11,600 metric tons of various kinds of paper, 4,500 metric tons of cardboard, and 10,000 metric tons of paper pulp had been produced. Compared with 1950, the gains were 31 per cent, 41 per cent, and 21 per cent, respectively.

Recent ECA Surveys in Austria

have shown that the current program of financial aid to paper manufacturers must be increased appreciably in order to meet manifold cost increases. Once completed, the program is expected to result in the following production increases: paper, 350,000 tons, compared to 224,000 in 1949; cellulose, 330,000 tons, compared to 207,000 in 1949; wood pulp, 112,000 tons, compared to 82,000 in 1949, and hand- and machine-made cardboard, 85,000 tons, compared to 53,000 in 1949.

West Germany's

Economic News Agency has reported that prices for Swedish paper pulp deliveries contracted after April 1 are to be reduced by 20 per cent.

Mine Planned in Texas . . . Sulphur Production Expands

Freeport Sulphur Co., New York, N.Y., has disclosed that a third new mining development would be undertaken at Nash Dome in Texas, about 35 miles south of Houston. Recent drilling disclosed the presence of a small brimstone deposit.

While the deposit is considered to be marginal under present conditions, the firm concluded early this year that, in view of the increased demand for sulphur, construction of a mining plant at the site should proceed.

In a general report of operations, Freeport has stated that it is spending approximately $20,000,000 on new projects aimed at increasing the nation's supply of defense-essential sulphur. Discussing the world sulphur shortage, the report disclosed that the "outlook is improving." Although 1951 was a year in which the demand for sulphur throughout the free world continued to exceed the supply, the shortage has acted as a stimulus to new projects.

The greatest addition, according to Freeport, is being made by American brimstone. It has been estimated that by the end of 1953 the annual over-all output of the United States may be increased by 1,200,000 long tons of brimstone and about 500,000 long tons of sulphur in various forms from other sources, while 1,300,000 tons more per year may be realized from projects in other countries.

Possibility Seen in N. Mexico

As part of a long-range program to bolster reserves, Freeport has obtained rights on government lands near Carlsbad, N.M., as a potential source of potash; and on lands containing sulphur-bearing ores, including 7,800 acres in Carroll County, Va.

Existence of a substantial deposit of potash has been established by prospect drilling on the government lands in New Mexico, but further drilling and study will be undertaken to determine future action. No development of the Virginia pyrites deposit is planned at this time.

Industry Notes

Tremendous Expansion

for the Idaho and Montana pulp and paper industry has been predicted by S. Blair Hutchinson, range specialist, who says there is enough timber east of the Continental Divide in Montana alone to supply eight pulp mills. At the present time, there is only one in the Idaho-Montana area.

Considerable Slackening

in the fine paper business was reported recently by Henry V. Burgee, vice president and general manager of Parsons Paper Co., Holyoke, Mass. He told a gathering of stockholders that the firm is now operating on a five-day week, whereas during most of last year it operated on a six-day work schedule.

International Paper Co.,

New York, N.Y., has announced that full production of various kinds of polyethylene coated paper is now under way. The product is described as heat-sealable, odorless, tasteless and waterproof. It is also effectively resistant to grease and moisture.

Chemical Debarking Research

being carried out at the New York College of Forestry in Syracuse was discussed recently at the college by representatives of 10 firms interested in the school's research foundation. The progress made in 1951 was reviewed and plans made for 1952. Firms taking part were International Paper Co., Penobscot Chemical Fibre Co., St. Croix Paper Co., American Smelting & Refining Co., P. H. Glatfelter Co., Brown Co., Hollingsworth & Whitney, Oxford Paper Co., Eastern Corp., and West Virginia Pulp & Paper Corp.

American Film Producers

of New York, N.Y., has produced a movie depicting the pulpwood industry of Guyton, Ga. The project is for government distribution in 40 countries and will have translations in 40 languages.

Pulp and Paper Production

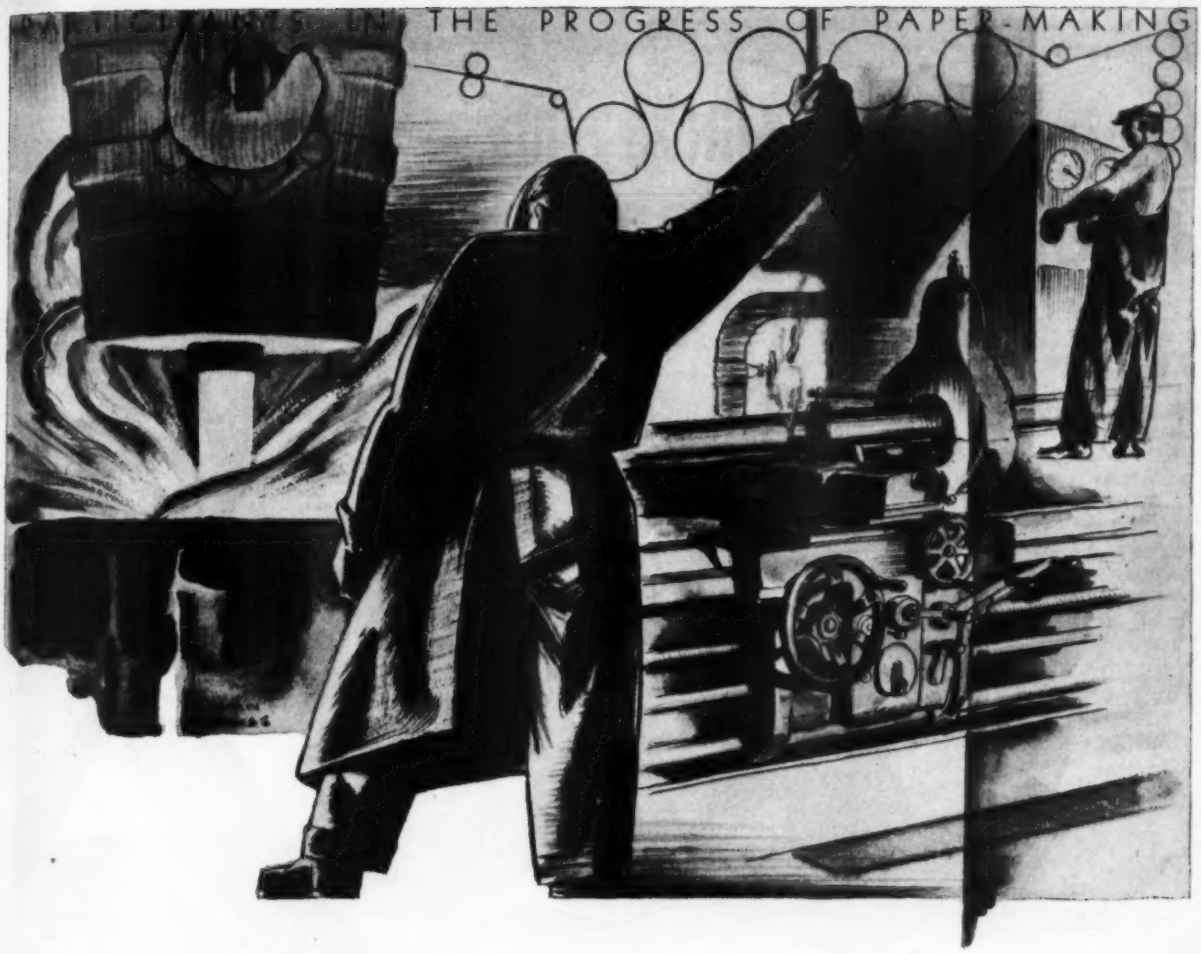
in Georgia has shown rapid growth during the past 10 years, as demonstrated by figures recently released by the state department of commerce. Pulp output in the state has increased from 441,650 tons in 1941 to 1,116,900 tons in 1950. Paper production increased from 386,900 tons in 1941 to 1,085,875 tons in 1950.

A $50,000 Appropriation

for an all-out attack on oak wilt has recently been voted by the Pennsylvania state legislature. The money will be spent in research and in developing a remedial action program.

Organized Fire Protection

in Georgia has resulted in increased efficiency and a reduction in damage from forest fires. During the period from July 1949 to June 1950 the acreage burned represented 2.09 per cent of the 13,925,-



Machinery . . . paper-making equipment traditionally combining original design and extremes of size with high speed operation, precision and durability . . . implements a great industry.

Fourdrinier Wires . . . as fabricated by Appleton Wire Works, Inc., reflect the 56 years of experience and devoted research that have *earned* the acknowledgement that *"Appleton Wires are Good Wires!"*

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HAM FELTZ says:

How many competitive mills do YOU visit in a year?

Most mill men are so busy with production problems that they have few opportunities to visit others and compare notes with superintendents whose problems are the same as their own.

The Hamilton Felt man is busy, too. He visits more paper and board mills in a week than you can visit in a year. He hears and sees what hundreds of mill men are doing to cut down drying costs. Not infrequently he helps them, by suggesting a change of felts, resulting in an increase of daily tonnage and a better finish.

Give him the "glad hand" when he comes to your plant.

Hamilton Felts

From the thinnest tissue to the heaviest board, there is a Hamilton Felt that will do your work well, fast and at low cost.

MIAMI WOOLEN MILLS

Established 1858

SHULER & BENNINGHOFEN, HAMILTON, OHIO

716 acres under protection. From July 1950 to June 1951 the acreage burned was only 1.516 per cent of the nearly 15,000,000 acres protected.

$5,000,000 to $7,000,000
is saved annually by the use of synthetic sizing agents in the paper industry, according to an announcement by Monsanto Chemical Co. According to the company announcement, they have cut operating costs in many mills by as much as one-third.

Eastern Corp.
during 1951 enjoyed the greatest productive year in its history by producing 77,631 tons of sulphite pulp and 52,603 tons of fine business papers. Other all-time highs reported by the firm: the 5,298 tons shipped during January, and the 206 tons of paper produced February 1.

Fibreboard Products Inc.'s
Timber Division has announced that the new location of its headquarters is at 1789 Montgomery St., San Francisco. C. L. Morey is manager. Assisting him is a staff of five woodsmen and engineers located at Hobart Mills and Forestville, Cal., and at Port Angeles, Wash.

Fast-spreading Flames
did between $175,000 and $200,000 damage to the U. S. Corrugated Box Co. plant in Indianapolis February 21. Most of the loss was to stock and equipment and resulted from water damage. Officials said that the multi-million-dollar concrete reinforced building did not appear badly damaged. A cigarette was blamed for the blaze.

$125,000 Damage
was caused March 3 in a fire that destroyed United Paper Co., Elizabeth, N.J. The loss amounted to $100,000 in newsprint, scrap, and other paper, plus an additional $25,000 in equipment.

$1,000 Damage
to waste paper and magazines was caused February 11 when a fire swept the Midwest Paper Co. warehouse in Dallas.

A Boiler Explosion
damaged a part of the Albany Corrugated Container Corp. plant in Cohoes, N.Y., recently. Windows were shattered, and a small fire followed the explosion. Extent of the loss was not determined.

Nine Western Massachusetts
paper mills have collected and delivered 500 tons of dormant iron and steel scrap over a period of four months. This scrap drive was conducted in Berkshire, Franklin, Hampden, and Hampshire counties.

U.S. Paper and Paperboard Production for 1951
(preliminary)

	1951 (tons)	1950 (tons)	1949 (tons)
Paper and board, total	26,086,115	24,377,222	20,315,436
Paper, total	11,621,640	10,641,559	9,197,520
Newsprint	1,106,086	1,013,346	917,778
Groundwood paper (uncoated)	788,713	704,064	674,542
Printing and converting (coated)	1,115,204	1,020,002	887,371
Book paper (uncoated)	1,621,620	1,578,795	1,416,309
Fine paper (writing, cover and text, bristols, thin paper and other)	1,364,029	1,198,574	1,014,954
Coarse paper (unbleached, kraft, glassine, greaseproof, vegetable parchment and other)	3,597,144	3,285,635	2,757,731
Special industrial paper	419,036	340,903	247,893
Sanitary paper	1,215,258	1,148,351	1,008,162
Tissue paper	270,138	225,199	186,667
Absorbent paper	124,412	126,690	86,113
Paperboard, total	11,604,536	10,925,225	8,996,777
Containerboard, total	6,346,966	5,830,277	4,680,076
Liners	4,204,580	3,872,051	3,131,627
Corrugating material	1,814,508	1,636,881	1,305,890
Container chip	327,878	321,345	242,559
Bending board (folding boxboard)	2,428,794	2,368,848	1,942,871
Non-bending board (set-up boxboard)	700,762	712,632	617,249
Cardboard	79,494	86,748	83,204
All other paperboard	1,849,498*	1,926,720	1,673,377
Wet machine board	144,431	166,237	131,036
Construction paper and board, total	2,715,508	2,644,201	1,990,103
Building paper and insulation	1,400,658	1,424,633	1,151,374
Hardboard and insulating board	1,314,850	1,219,568	838,729

(*) The figure shown for "All other paperboard" (other bending board, other non-bending board, and special paperboard) does not include production during January 1951. This figure for January is 199,022 tons, and is included in the "Paperboard" total. *Source: U. S. Department of Commerce.*

PRODUCTION FIGURES for January 1952 appear on page 65 of this issue

Worthington Pump Announces Name Change

Stockholders of Worthington Pump & Machinery Corp. at their recent annual meeting in Wilmington, Del., voted to change the firm's name to Worthington Corp. No corporation policies or practices will be affected in any way by the action.

"While we are proud of the fact that 'Worthington' has meant 'pumps' to the world at large for more than a century," President H. C. Ramsey declared, "we are equally proud of the fact that during this same period Worthington has extended its manufacturing activities into many other fields with the result that today, with few exceptions, every industrial and commercial enterprise is a potential user of one or more of the many other items of our equipment. Because of our wide diversification we believed that the continued reference to 'pumps' in the corporate name continued to lead the public into the erroneous conclusion that pump manufacture was our only endeavor. Such, of course, is not the case."

Chlorine Production Shows Increase

Chlorine industry spokesmen have told NPA that the industry would need government assistance in getting enough equipment to proceed with the chlorine expansion program. At a recent meeting of the Alkali Chlorine Industry Advisory Committee it was disclosed that 1951 production rose to 2,513,000 tons from the 2,084,000 tons of 1950. The production goal which has been set by DPA for 1955 is 3,435,000 tons.

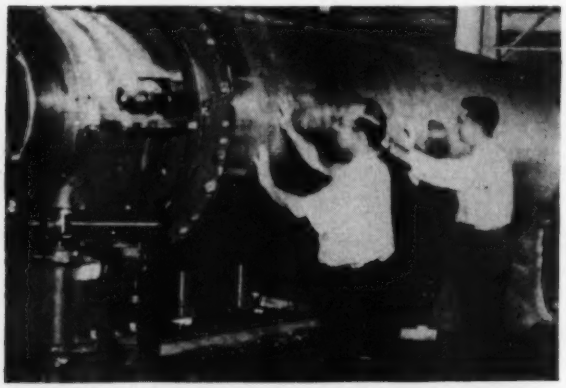
NPA told the industry that chlorine tank car production is on the increase, with 480 new units scheduled for delivery by July. Contrary to earlier fears, car builders are having no difficulty in obtaining nickel-bearing steel.

Diamond Alkali Expansion

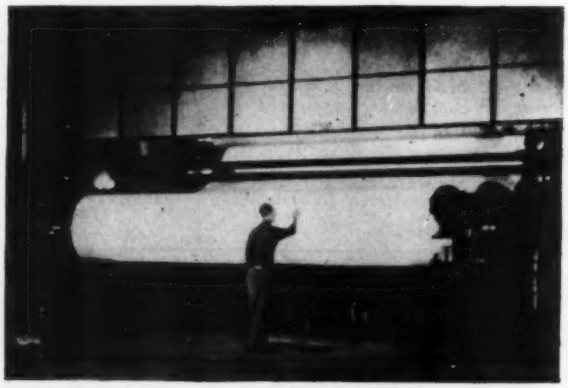
Diamond Alkali Co. has awarded contracts to H. K. Ferguson Co., Cleveland, to engineer and construct facilities for a major expansion of chlorine production at Diamond's plant in Painesville, Ohio. The project will more than double the productive capacity of chlorine and caustic soda by the electrolytic method, while

CONFERENCE between the reporter who tells the film's story and two executives of Beloit Iron Works is shown in a scene from the film; standing behind the desk is H. C. Moore, a Beloit vice president, while to the right is President E. E. Neese

DEMONSTRATION of a throttling device takes the spotlight during an engineering conference at the Beloit plant; the discussion in this scene is being led by Lloyd Hornbostel, vice president in charge of engineering



INSPECTING the thousands of perforations in a couch roll



FINISHED REEL receives a last minute going over

Beloit Iron Works Releases Paper Industry Film

Beloit Iron Works, Beloit, Wis., has announced that their new sound film, "The Paper Story," is now available to pulp and paper mills and to civic groups in areas near the mills. The organization of the film is based on the eye witness account of a reporter whose interest in the story of paper is aroused by a magazine quotation: "Paper is indispensible to human advancement. Man uses it more than any other commodity except fresh water."

The camera follows the reporter as he traces the story from the woods, through the mill, and finally to Beloit, where he finds out for himself the detailed planning and precision craftsmanship that go into the huge machines used in this essential industry. Technical details are minimized in the film, and the scenes shown are of interest to persons outside the industry, as well as to those who make the paper.

Included in the film are views of paper machines for producing newsprint, kraft, book, waxing stock, fourdrinier board, cylinder board, magazine, tissue, glassine, and greaseproof.

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also enabling the firm to abandon the traditional lime-soda process of producing caustic. The new facilities are to be located on a 20-acre tract and will require the use of approximately 1000 piles to support building and equipment.

Sterling Electric Motors Opens Two District Offices

Sterling Electric Motors, Inc., Los Angeles, has announced the opening of two new district sales offices. One in Denver is to be located at 1726 Champa St. and will be under the supervision of James R. Hughes. The office will serve the industrial, commercial, and agricultural requirements for electric power drives in Colorado, New Mexico, and parts of Wyoming, Nebraska, and Texas.

Sterling also recently opened a sales office in New Orleans. J. D. Trice is manager. Formerly, the area had been served by the Memphis office. The New Orleans branch is located at 12 San Jose Ave.

Denver Equipment Buys Rights to Automatic Sampler

Denver Equipment Co. has acquired exclusive manufacturing and sales rights to the Automatic Sampler, formerly known as the GECO sampler. It was originally produced by Heginbotham Equipment Co., Salt Lake City. The unit, to be known as Denver Automatic Sampler, has been thoroughly tested in mill operations. According to the firm, it has proven extremely valuable in obtaining accurate wet or dry sample cuts necessary for reliable mill control.

Sliding contact has been replaced by carriage assembly on ball bearing rollers. The cutter, with standard travel of either 16 or 21 inches, is actuated by means of a positive chain and sprocket drive. The driving unit is a gearmotor operating at intermittent intervals. A limit switch shuts off the motor at the limits of cutter travel. The time switch reactivates the mechanism according to the established sampling cycle. Overtravel of the cutter is prevented by a magnetic-operated brake on the end of the motor shaft.

Three B-C Executives Abroad

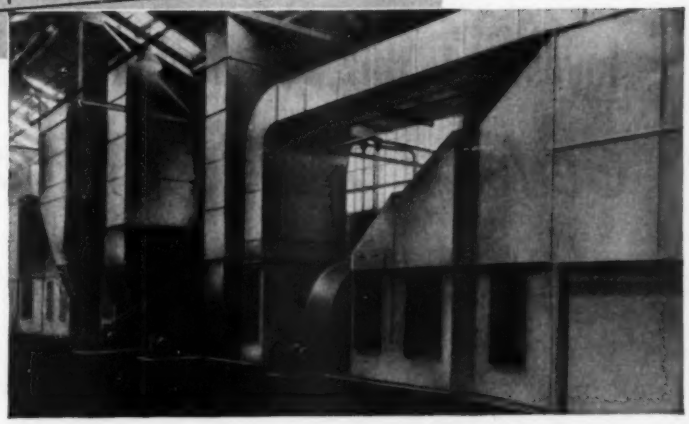
Three executives of Black-Clawson, Shartle Bros. Machine Div., Middletown, Ohio, are in Europe for the firm. C. R. Crawford, president, arrived in Naples, Italy, in February to begin a tour of inspection and consultation with B-C representatives in Italy, France, Switzerland,

Savings secured per 100 tons production with the

ROSS-BRINER *Economizer*

Outdoor Temp.	Temp. after Briner Economizer	Temp. rise °F	Equivalent Steam		Savings per month of 25 days (75c steam)
			Lbs./hr.	Boiler h.p.	
– 20 F.	72 F.	92	11,700	338	$5,260.00
0	78	78	9,900	287	4,450.00
20	84	64	8,100	235	3,640.00
40	90	50	6,350	184	2,860.00
60	96	36	4,100	132	1,840.00

Table above is far an average 100 tons per day machine operating 25 working days per month. Note equivalent boiler horsepower which is significant.



Ross-Briner Economizer apparatus on platform over hood in back of the machine.

a means for changing hidden waste to annual profit

The monthly savings shown on the table above represent the cost of steam that would be required without the Ross-Briner Economizer. Obviously such savings can rapidly pay the entire cost of the installation and thereafter return large dividends on the investment.

Where the Ross-Briner Economizer can be used to heat air for Vapor Absorption or, a felt drying system or to heat fresh or white water, the annual saving is further increased. With fuel and steam costs steadily rising, no mill can afford to ignore savings of $1.00 and more per ton that the Ross-Briner Economizer can assure. Ask us to show you performance figures from actual operation in scores of mills.

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As a Reducing Agent or
As an Antichlor...

Investigate this Dependable

GENERAL CHEMICAL PRODUCT

ANHYDROUS SODIUM BISULFITE

(Sodium Metabisulfite)

97.5% $Na_2S_2O_5$ (available SO_2: 65.5%)

Leather—for chrome tanning; for bisulfiting of tannin.

In Photography—for fixing solutions.

Textiles—for bleaching wool; antichlor after bleaching with hypochlorite; rayon manufacture.

Water Treatment—as an antichlor.

Food Processing—for sulfiting fruits and vegetables.

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In Wisconsin: General Chemical Company, Inc., Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

BASIC CHEMICALS
GC
FOR AMERICAN INDUSTRY

Germany, Holland, and Belgium. He will also visit the principals of the B-C British subsidiary, B-C International Ltd., London. Mr. Crawford also hopes to visit mills in Ireland, as well as mills in England and continental Europe, to observe the operation of Black-Clawson, Shartle, Dilts paper making equipment.

Frank T. Peterson, new assistant general manager of the Black-Clawson Hamilton (Ohio) Division, recently arrived in London for an indefinite tour of duty with B-C International Ltd., where he serves in the capacity of deputy managing director. Another company executive, Michael B. Gormley, service engineer, is in Italy to assist Cartiera Italiana in the start-up of their new B-C cigarette tissue machine. This new fourdrinier machine installed at the Italiana mill will supplement the production of 10 other such machines in that installation.

C. R. Crawford

F. T. Peterson

M. B. Gormley

Albany Felt Co.,
Albany, N.Y., is planning to expand its operations with the construction of a plant in Canada. According to the president, Lewis R. Parker, negotiations are under way for the erection of a paper makers felt plant. Several sites are being considered. The factory is to be a one-story building about 630 feet by 100 feet, with a boiler plant. The move does not involve a transfer of production or machinery from present operations.

Hooker Electrochemical Co.,
Niagara Falls, N. Y., has announced that ground has been broken for construction of a $12,000,000 chemical plant on a site near Montague in Oceana County, Mich.

De Laval Steam Turbine Co.,
Trenton, N.J., has announced the formation of a subsidiary corporation, De Laval Turbine Pacific Co. Headquarters are in San Francisco. C. F. Reeves, vice president and general manager, will be in direct charge of operations, continuing the duties he has had for many years as West Coast manager of the parent firm. Branch sales offices are located in Los Angeles and Seattle.

U.S. Paper and Paperboard Production

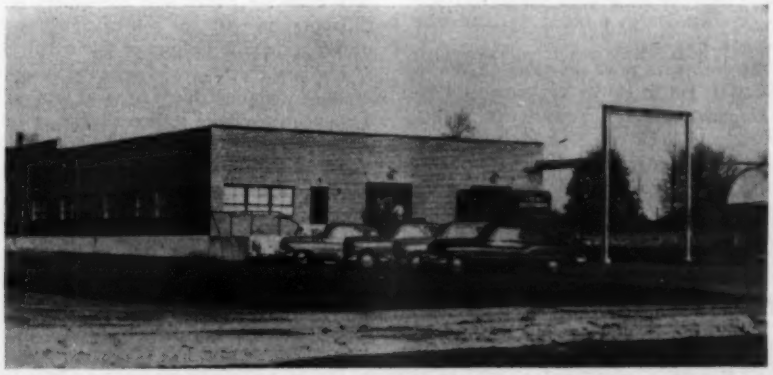
	Jan. 1952 (tons)	Dec. 1951 (tons)	Jan. 1951 (tons)	Total 1950 (1,000 tons)	Total 1945 (1,000 tons)
Paper and Board, total	2,104,673	1,846,617	2,261,267	24,300	17,371
Paper, total	1,028,455	951,131	967,672	10,679	7,574
Newsprint	96,330	89,883	95,173	1,017	725
Groundwood paper (uncoated)	76,780	70,252	61,983	694	636
Printing and converting (coated)	99,713	91,585	91,377	1,015	1,501*
Book paper (uncoated)	139,490	129,870	145,737	1,577	
Fine paper (writing, cover and text, bristols, thin paper and other)	126,753	118,200	112,162	1,223	1,001
Coarse paper (unbleached, kraft, glassine, greaseproof, vegetable parchment and other)	320,281	305,258	293,119	3,383	2,403
Special industrial paper	35,899	33,645	27,090	316	238
Sanitary paper	104,942	88,688	100,889	1,108	824
Tissue paper	18,317	15,922	27,155	241	157
Absorbent paper	9,950	7,828	12,987	105	89
Paperboard, total	880,172	733,482	1,056,714	10,804	7,907
Containerboard, total	474,403	406,775	555,134	5,646	4,131
Liners	319,656	271,378	360,662	3,690	
Corrugating material	130,338	116,334	160,817	1,637	
Container chip	24,409	19,063	33,655	320	
Bending board (folding boxboard)	257,399	206,638	(1)	2,368	2,092
Nonbending board (set-up boxboard)	63,607	46,744	(1)	641	721
Cardboard	5,747	5,289	7,005	77	71
All other paperboard	79,016	68,036	199,022[2]	2,071	891
Wet machine board	11,394	9,189	13,755	144	112
Construction paper and board, total	184,652	152,815	223,126	2,673	1,778
Building paper and insulation	89,635	70,663	130,922	1,414	883
Hardboard and insulating board	95,017	82,152	92,204	1,259	895

(*) Total for 1945, combining printing and converting paper and book paper. (1) Data not available due to revision of classifications. (2) Figure includes "Other bending board" and "Other non-bending board." *Source: U. S. Department of Commerce.*

Canadian Chemical Co.
has announced that construction of its new $55,000,000 plant at Edmonton, Alta., is proceeding on schedule. Completion of the cellulose acetate and chemicals factory, largest chemical plant in Canada, is planned for the end of this year.

Hercules Powder Co.'s
Paper Makers Chemical Department, Wilmington, Del., has announced the opening of a new unit in Savannah, Ga., for the production of Kymene 138 and Kymene 234, wet-strength resins for paper.

Printing Ink Division
of Interchemical Corp. has announced the opening of a new branch office and service station in Charlotte, N.C. Morris Wachtel is in charge of the office.



DRUM AND BULK STORAGE of chemicals is provided in this new warehouse recently completed by Rohm & Haas Co. near Charlotte, N.C. The new facility includes administrative offices, truck-loading platforms, a turn-around area, and a storage tank for liquid resins

1—Mill view looking north across Hudson River

Expansion on the Hudson . . .

Finch, Pruyn installs new fourdrinier

Expansion coupled with modernization has been gained in the multi-million dollar project completed in recent months by Finch, Pruyn & Co., Inc., Glens Falls, N.Y. Centered on the installation of a modern $1,000,000 fourdrinier paper machine, the growth program, according to Lyman A. Beeman, president, has made the mill "more efficient and more flexible to insure full-time operation in either a wartime or a competitive market."

In the years since the close of World War II, Finch, Pruyn has aimed its development program toward the manufacture of book grade papers for magazines, pocket-size books, hard cover books, catalogues, and directories. In addition, the firm produces converting papers for use in business forms, box liners, coating stock, etc.

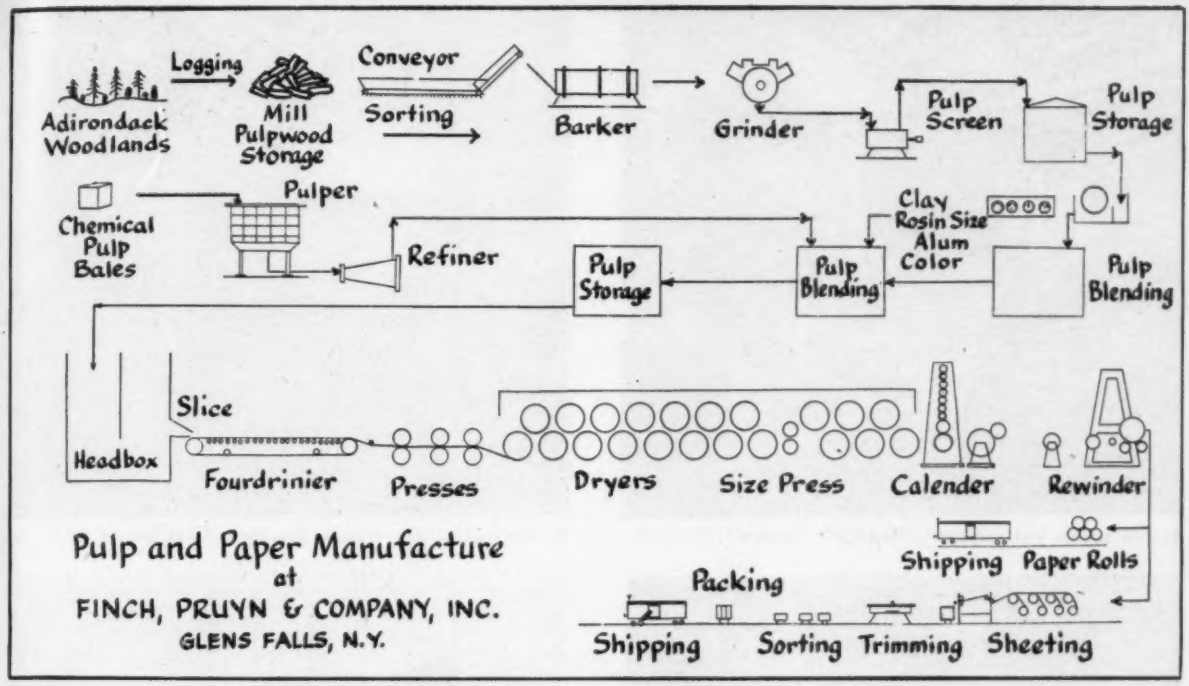
New paper machine

The major project in the general expansion theme was the installation of a 122-inch Puseyjones fourdrinier paper machine. The unit was put into operation February 26, 1951, after having been on order since March of 1950. It was built at Pusey & Jones Corp. of Wilmington, Del.

According to R. I. Wynne-Roberts, chief engineer for Finch, Pruyn, six weeks were required to accomplish the task of dismantling the old paper machine, built and installed in 1905, and installing the new machine. The work was done by paper mill employees in collaboration with the construction firm of Waggaman & Collyer of Glens Falls.

The new machine was designed to operate at a nominal speed of 1000 fpm on a conventional wire section using a wire 122 inches wide by 78 feet 7 inches long. Equipment includes a 30-inch diameter Downingtown suction couch and six 7-inch stainless steel suction boxes. The head box of conventional design is made of stainless steel and is attached to a stainless van de Carr-type slice, adjustable both vertically and horizontally. The table rolls are rubber covered and closely spaced to give a maximum forming bed; however, they are easily removed from contact with the wire to accommodate sheets of varying water content. A high-speed duplex shake is used along with a shaking roll in the last wire roll position prior to breast roll.

Two suction presses with rubber covered perforated rolls are installed using granite top rolls. A unique feature of the press section is the very close center spacing of the rolls. The felts run vertically down to the floor below. The press rolls can all be hydraulically controlled as to loading, providing a nip pressure up to 200 lb. per linear inch. A heavily weighted smoothing press, using brass and rubber rolls, is located just prior to a nest of 39 main 48-inch dryers with ten 48-inch felt dryers. Provision has been made so these felt dryers may be operated as felt dryers or, if developments later require, can be operated as Feeney dryers. A size press has been installed, providing 11 dryers after the size press. A 10-roll calender stack equipped with anti-friction bearings is used. A new type Pusey & Jones reel is utilized whereby the reel is under controlled pressure providing a more uniform density in the reel winding. A General Electric regenerative braking



2—Flow sheet of pulp and paper manufacture at Finch, Pruyn

system is used with the rewinder, allowing speeds up to 2500 fpm under controlled tension to give uniform density rolls. The rewinder has two motor-operated drums with adjustable slip between the motors.

The entire machine is equipped with anti-friction bearings, and all parts in contact with dilute stock are corrosion resistant. The machine is driven in sections through a main line shaft, through Fawick Airflex air-operated clutches, and Falk reduction units. All controls are at the tending side, providing easy manipulation of the draws and other necessary adjustments.

The dryer section has a J. O. Ross hood with Briner economizer units for heat recovery and a bottom felt air system for conditioning of the dryer felts.

The machine is driven from a main line shaft, motivated by a DeLaval steam turbine provided with a 10-to-1 Woodward governor control with ¼ of 1 per cent speed control.

Bleach plant

Principal process equipment was manufactured by Improved Paper Machinery Corp. Tiled tanks were built by Stebbins Engineering. The system was put into operation June 1, 1948.

The continuous system of peroxide bleaching is used to obtain approximately eight to 10 points increase in brightness of groundwood. The system is as basically developed by DuPont, involving thickening of deckered groundwood to 12 per cent, pre-heating and subsequent treatment with bleaching solution in a vertical tower at varying periods of retention. Percentage peroxide will vary from 1¾ per cent to 2¼ per cent, depending on the bleaching characteristics of the groundwood and the extent of the improved brightness required.

Bleaching liquor is prepared on an automatic basis using equipment built by Proportioneers, Inc.

Machine room ventilating system (No. 3 machine)

Equipment was manufactured by J. O. Ross Engineering Corp. and put into operation October-November 1949.

The ventilating system was designed to maintain a balance between the air exhausted from the hood and the volume of air put back into the machine room from the economizer system. Air from the hood is exhausted through Briner economizers, recovering by counter-current heat exchange part of the heat carried away in the exhaust vapors. The incoming air is further tempered by steam heated coils so as to obtain a temperature that will keep the roof dry and free of moisture.

No. 3 machine also includes a further recovery of the waste heat by heating atomized water passed through the exhaust vapors. This warm water is used at head box showers and similar points. Heated air from one of the economizers is blown on the bottom dryer felts so as to properly condition them and to extend their life.

The economizer equipment is installed on the roof of the mill and is largely made of aluminum so as to avoid redesign of the supporting steel work. All of the duct work carrying the air is likewise aluminum, both to conserve weight and to inhibit corrosion. The large use of aluminum makes this a unique installation.

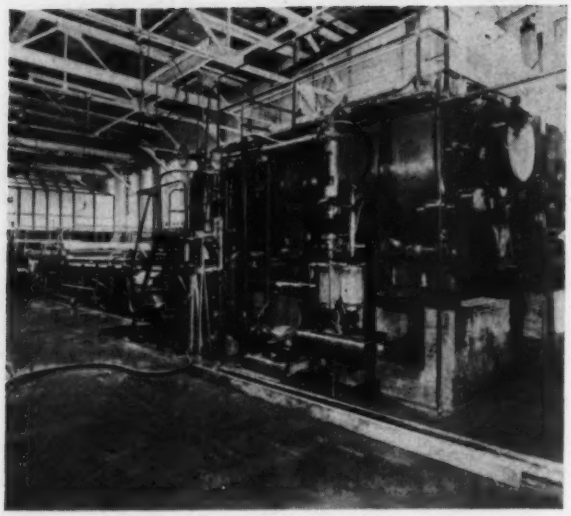
Machine room ventilation (No. 1 machine)

As part of the rebuilding of No. 1 machine, the ventilating system has been re-designed. The exhaust vapors are passed through aluminum Briner economizers. The incoming air heated by these vapors is blown along the roof line so as to balance the air conditions within the machine room. In addition, heated incoming air further tempered by steam heaters will blow air on the bottom dryer felts so as to condition the felts for proper drying and to extend their life.

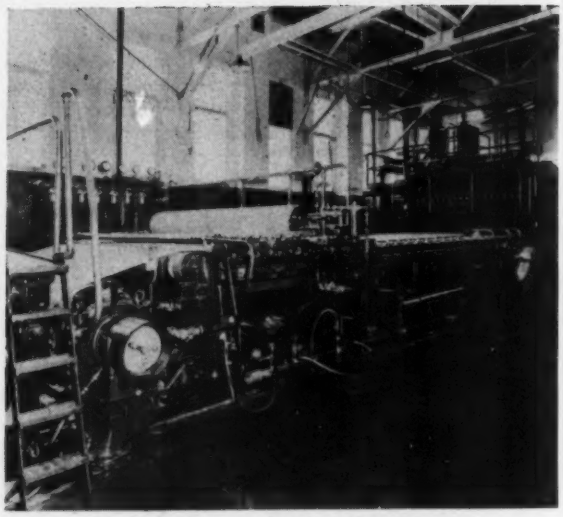
Pneumatic clay system

Equipment manufactured by Fuller Co., Catasauqua, Pa., was put into operation November 1948.

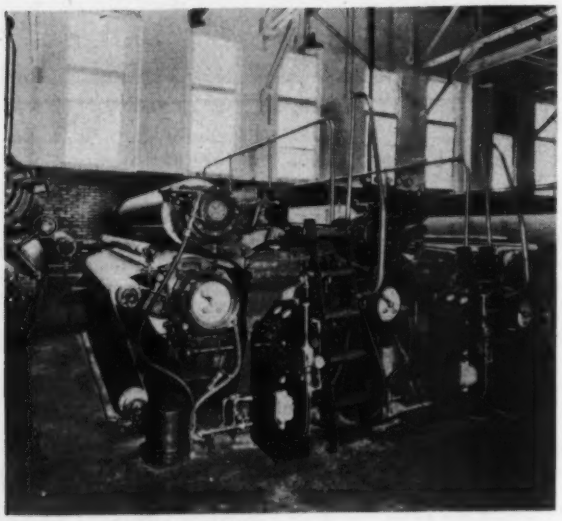
Clay delivered at the siding in bulk in freight cars is pneumatically handled with this system and conveyed to two tile clay storage silos, each holding approximately 200 tons. Clay from the silos is then brought back with the same equipment into the mill and placed in water suspension by automatic mixing and proportioning equipment maintaining a density of about two lb. per gallon. The clay suspension is screened through a



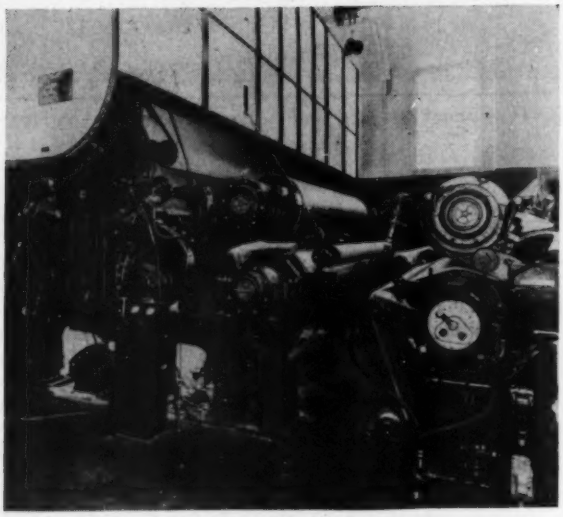
3—Bird screens and wet end of fourdrinier machine



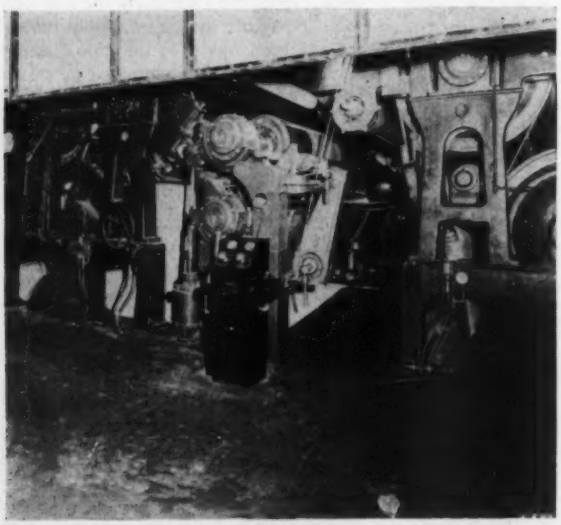
4—Wet end of new 122-inch Puseyjones fourdrinier



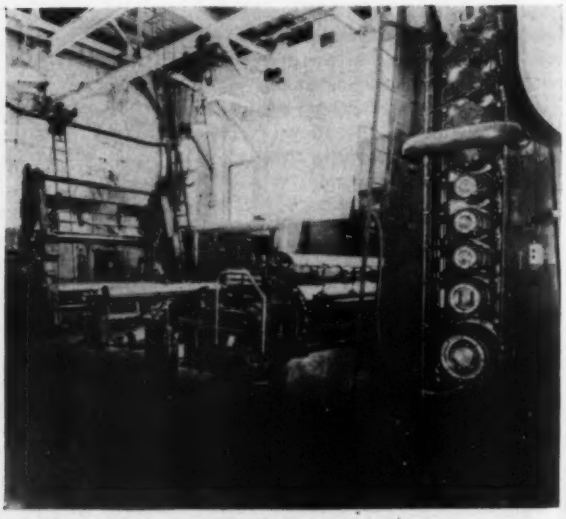
5—Press part with two suction presses



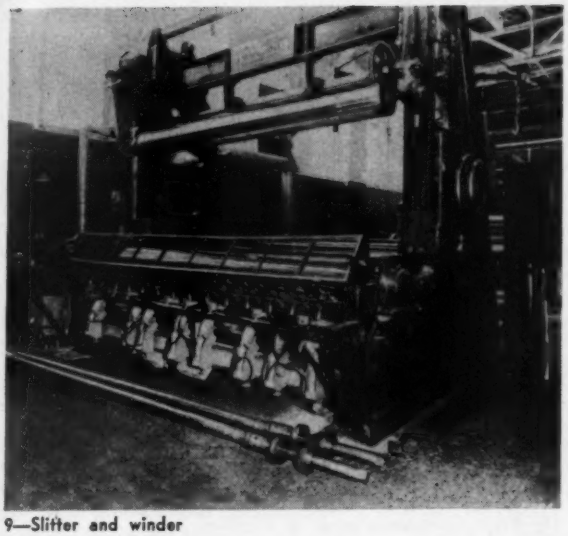
6—Smoothing press and wet end of dryers



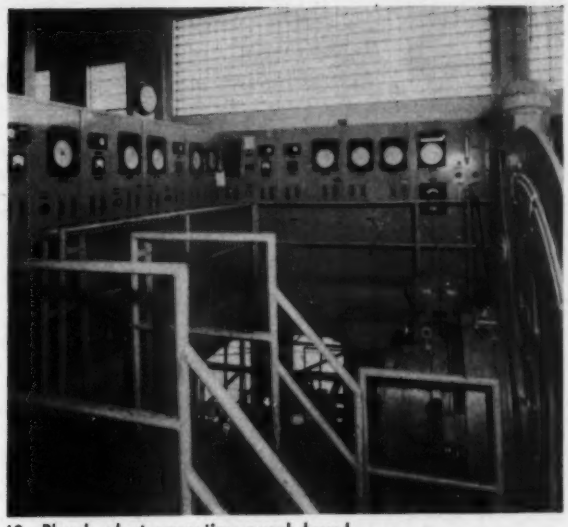
7—Size press installed in dryer section



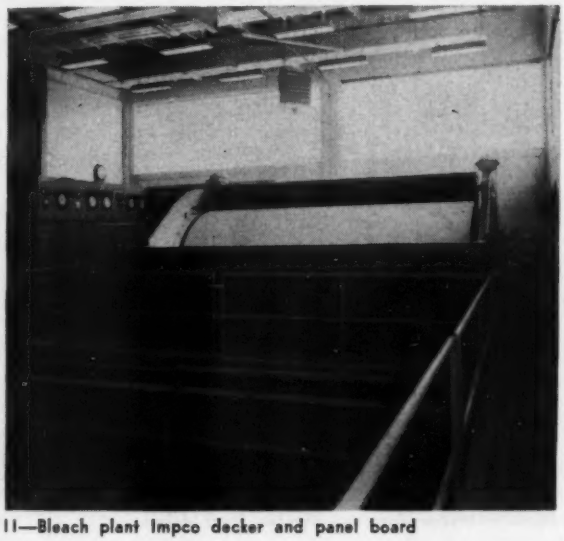
8—Calender stack, reel, and winder



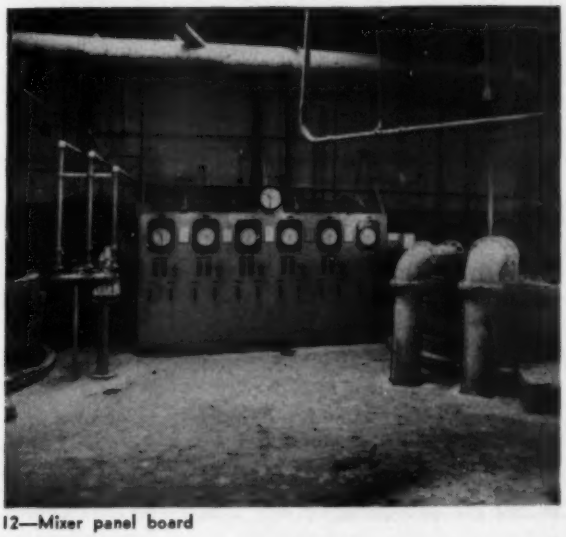
9—Slitter and winder



10—Bleach plant operating panel board



11—Bleach plant Impco decker and panel board



12—Mixer panel board

vibrating unit (Hummer) passing through 100 mesh wire. The screened suspension is then flowed to large volume storage tanks and used on the paper machines as required. The clay suspension is measured at each of the three machines through a Rotameter and mixed in the pulp stream going to the Bird screens.

Chemical pulp processing equipment

Baled kraft and sulphite as received is slushed in a 14-foot Hydrapulper, manufactured by Dilts Machine Works and put into operation in July 1946.

The whole bales of approximately 400 lb. each are dumped into a vat of water, and the sheeted pulp is reduced to slush form by a rotating impeller designed to create a violent vortex and mass rotation. The Hydrapulper holds approximately 2000 lb. of dry pulp at 4 per cent consistency.

The slushed pulp is then treated in a series of Morden Stock-Makers manufactured by Morden Machines Co. Two of these units were installed in July 1946, the third in June 1948, and the fourth in August 1949. Each unit is driven by a 150 hp motor. The degree of treatment can be regulated, and the various pulps are treated according to the requirements of the paper being made on each of the three machines. The degree of treatment varies from merely rubbing out pulp flakes to a drastic 400 point freeness drop. The arrangement is such that the pulp can be passed through the Mordens in series using from one to four Mordens to do the work. The treated pulp is then pumped to the storage chests and eventually used in the mixers in the proportions called for by the furnish sheet.

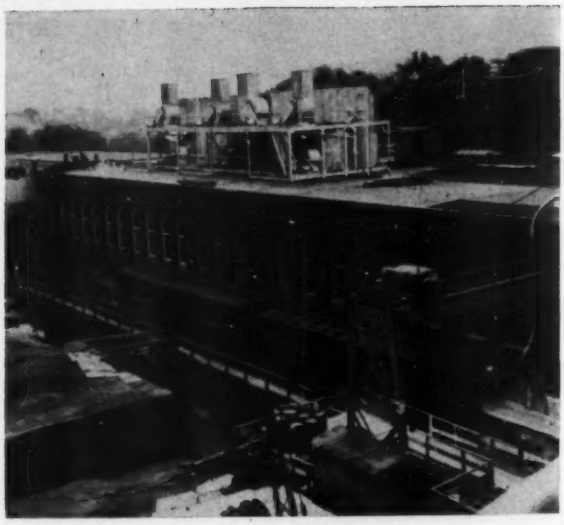
Size system

In January 1949 a continuous emulsifying system for the preparation of size was installed. The general system was designed by Hercules Powder Co. and the equipment provided by Proportioneers Inc. Size, 80 per cent solids, is delivered to the siding in tank cars, and is flowed by gravity to storage tanks. From the storage tank, heated to insure fluidity, the size is pumped through proportioning equipment to which hot and cold water is added in the correct proportions to give a final size emulsification suitable for use in the mixers. The equipment is designed so the diluted size can be prepared on demand and pumped to a storage tank providing ample storage facilities for an extended run on the paper machine.

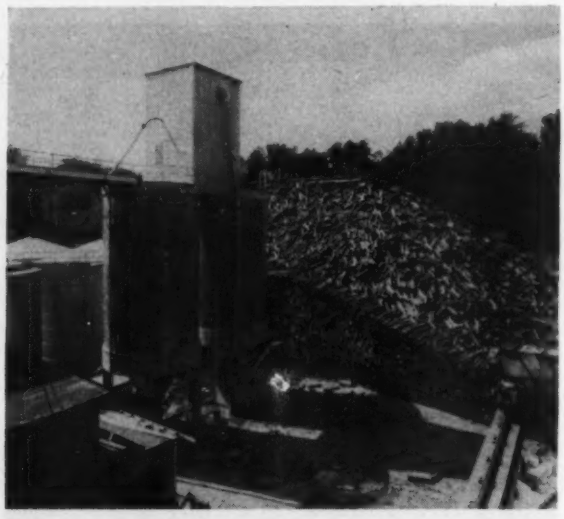
Alum preparation

In equipment provided by Omega Machine Co. and installed in April 1948, bagged alum is poured into a silo of 3-ton capacity. The alum is then fed by a proportioning device into water and the ratio of each correctly proportioned

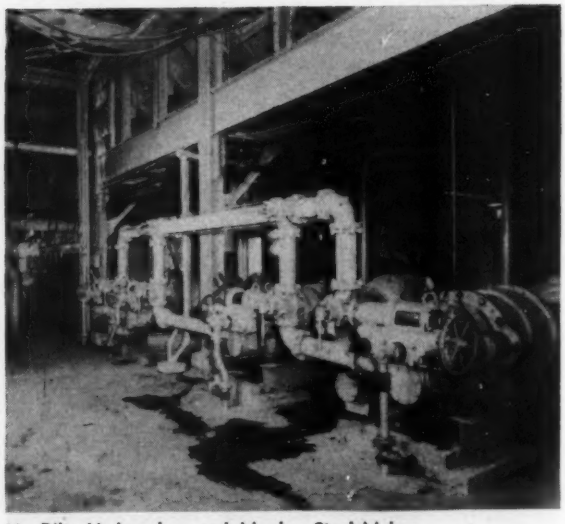
13—Bleach plant peroxide make-up panel board



14—Briner economizers, made of aluminum



15—Tile clay storage silos



16—Dilts Hydrapulper and Morden Stock-Makers

to deliver an alum solution of a density of 1 lb. per gallon. The alum solution is stored in a stainless steel tank. As required in the mixers, the alum solution thus prepared is passed through a measuring Rotameter made by Fischer and Porter and a correct amount added to the mixer. This amount may be varied according to a panel setting.

Size press—(No. 3 machine)

The size press manufactured by Pusey & Jones was installed on No. 3 machine in November 1949. The size press was inserted in the dryer bank so as to provide nine dryers after the size press. The upper size press roll is rubber and the bottom roll sandblasted chromium plate. Auxiliary equipment to provide control of the starch or coating solution consists of pumping equipment, temperature regulation for the solution and a vibrating (Hummer) screen for the purposes of screening out impurities.

Broke handling

In order to handle the dry broke from the paper machines more expeditiously a Liebeck has been installed on both numbers 2 and 3 machines. No. 2 Liebeck was put in operation May 1949 and No. 3, May 1950.

The dry broke from the last dryer feeds directly into a tile chest immediately below. Water is added in quantity sufficient to maintain a fixed consistency. The dry broke mixing with the water is violently agitated by opposing propellers in the tile chest and reduced to slush form and returned to the machine chest. The consistency is regulated by a Trimbey regulator, and the level of the chest is automatically maintained at a fixed height by a liquid level control.

In order to regulate the pH of the stock going to the wire on the machine manufacturing hanging paper, an automatic pH regulator manufactured by Bristol Co. has been installed. Originally placed on No. 1, it has now been moved to No. 2, which is making the hanging paper. Alum solution of a constant density is automatically added by a regulating valve to the white water from the machine wire so as to provide a constant pH measured by suitable electrodes immersed in the white water solution. The close regulation of the pH allows more constant sizing of the sheet and an overall better quality.

Finch, Pruyn historical development

Finch, Pruyn & Co., Inc., was originally a partnership formed in 1865 by J. W. Finch, D. J. Finch and Samuel Pruyn. The firm purchased the Glens Falls Co., manufacturer of lumber, black marble and lime, which had been organized about 1835. In 1885 D. J. Finch left the firm, his partners acquiring his interest and continuing to operate the four companies, viz.,

Finch, Pruyn & Co., Glens Falls Co., Glens Falls Co. Mill, and Associated Lime Co. Business has been conducted at the present location for more than 100 years.

The two partners in 1885 were ideally suited to the operation. Mr. Finch had learned logging operatoins as a young man. At the beginning of the partnership he supervised lumbering and was in charge of distribution. He died in 1904. Mr. Pruyn entered the lumber business in Glens Falls in 1865. His duties included the management of lumber manufacture. He died in 1908.

In 1904 the four firms were merged into a corporation known as Finch, Pruyn & Co., Inc. Its officers were George R. Finch, president; Maurice Hoopes, vice president and secretary, and Howard H. Pruyn, treasurer.

The year 1904 saw the company introduce a period of expansion and progress with the breaking of ground for its paper mill. Two paper machines were installed and began production in the fall of 1905. A third machine was added in 1910, while in 1912-13 a steam sawmill was constructed at Glens Falls, and the water power mill at Feeder Dam dismantled. In this same period the retail lumber and building materials business was started.

Production for the first full year of the paper mill's operation amounted to 15,717 tons of paper and 13,506 tons of groundwood pulp. As demand increased, the pulp mill was steadily increased in capacity and in 1933 and 1934 the grinding equipment was completely changed.

Paper production continued on a nearly unchanging level from 1910 to 1919, when the machines were improved and production was stepped up to approximately 44,000 tons a year. Except for the depression years of 1932 and 1933, when newsprint consumption reached a low ebb, the mill was running at capacity. In 1935 its output had increased again to 43,679 tons of paper and 39,665 tons of groundwood pulp. In 1938 the company manufactured 35,000 tons of newsprint and 10,000 tons of other groundwood papers, including hanging paper, poster paper, drawing paper, pencil tablet, novel news and toweling. Newsprint, however, headed the list by a large margin.

In 1944 the company began a withdrawal from the manufacture of newsprint, although the output of hanging paper was continued, as was the production of drawing and other groundwood printing and converting papers.

Better manufacturing methods combined with new equipment have very substantially boosted the output of Finch, Pruyn to approximately 56,000 tons per year. About two-thirds of this production is devoted to printing papers, while the remaining third is distributed among hanging paper, drawing, lining and other converting grades.

Finch, Pruyn owns the water rights necessary to generate power for the mill operation. Water turbines are directly connected to both the generators and the grinders. During high water periods, excess power is generated and sold to the local power company. When water is low it is necessary for the mill in turn to purchase additional power to maintain steady operation.

Present company management is composed of Lyman A. Beeman, president; Samuel Pruyn, vice president and sales manager; G. F. Hoy, treasurer; E. S. White, secretary; R. I. Wynne-Roberts, chief engineer; and A. L. Mosher, mill manager.

Better mill operation . . .

Graphic panels promote efficiency

E. A. MURPHY
Market Extension Division
Minneapolis-Honeywell Regulator Co.

Just what is a graphic panel?

Is it some radically new form of instrumentation that renders the conventional master control panel obsolete?

If I am modernizing my mill, must I install graphic panels throughout in order to be sure I have the last word in instrumentation?

These are but a few of the many questions asked by mill men since the graphic panel came before the public eye not too many months ago. There is nothing mysterious about a graphic panel, and this article has been prepared in the hope that the information contained in it may be of some help to the mill man faced with the task of specifying instrumentation either for a new mill or as part of a modernization program for an existing mill. In it no attempt will be made to take sides either for or against the graphic panel, but rather, an attempt will be made to trace the evolution of the graphic panel, and set forth some of the reasons given by users of these panels as to why they prefer them to the conventional master control panels. The views expressed are not necessarily those of the author, but comprise a summation of opinions expressed both by users of graphic panels, and engineers concerned with their development.

WEBSTER DEFINES THE word "graphic" as "describing clearly and vividly", and, if we were to insert the words "a process" between "describing" and "clearly" we would have a pretty fair definition of a graphic panel. It is a panel on which appears not only indication and record of process variables, and the means of controlling them, but also a graphic portrayal of the process or series of related continuous processes controlled from the panel.

Early graphic panels made their appearance in the petroleum industry almost 10 years ago. They were large panels on which processing equipment, flow lines, and valves had been painted in miniature. Conventional indicating and recording instruments were mounted directly in this panel at points in the pictorial flow diagram identical to the points where the instruments were measuring and/or controliing variables in the actual processing equipment.

As the years passed, the processing equipment, and consequently the pictorial flow diagrams, increased both in size and complexity, until it became evident that, from the standpoint of size alone, these panels were rapidly approaching the limits of practical usefulness. Consequently, there began to exist a real need for smaller instruments —indicators and recorders of a size that would permit the pictorial flow diagram to be reproduced on a much smaller scale. The development of these miniature instruments made possible the graphic panels of today.

Today's graphic panel gives panoramic view of process

Shown in Fig. 1 is a graphic panel engineered for the brown stock washing line of a paper mill. As can be seen, the entire process, from the blow tank at the extreme left, to the washed stock storage chest at the extreme right, is placed right before the eyes of the operator. Flow lines indicate the movement of the stock through the washing system as well as flows of wash water and

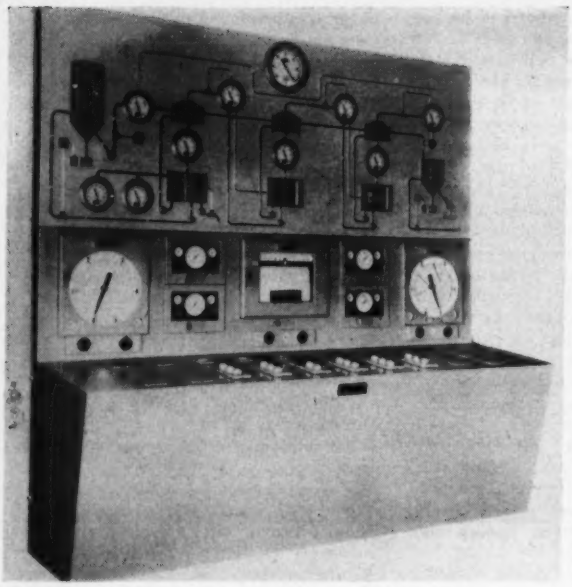


Figure 1—Graphic panel for brown stock washer line; console-mounted push-buttons

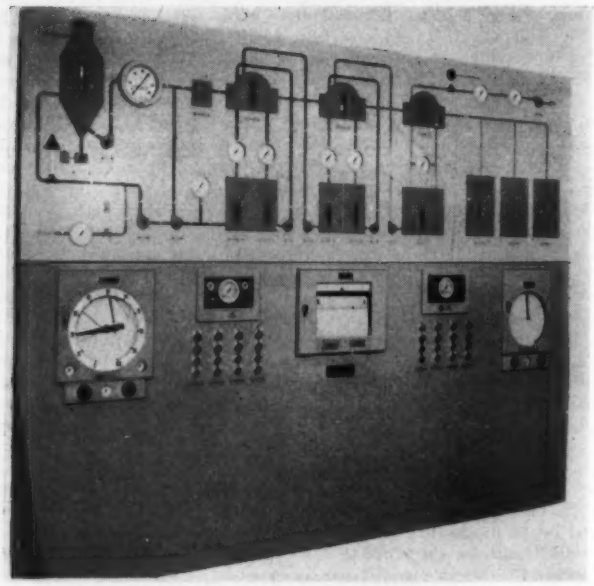


Figure 2—Graphic panel for brown stock washer line; this with panel-mounted push-buttons

liquor, and the flow of black liquor to the storage tanks.

Color is frequently used in these flow lines to give an indication of the type of material moving through them. For example, the line connecting the blow tank with the first washer could be dark brown in color, approximating the color of the unwashed brown stock. Succeeding stock flow lines would be shown in progressively lighter color, until the line from the last washer to the washed stock storage chest would approximate the color of the washed stock. In similar fashion, colors of the lines leading from the washers to the black liquor storage tanks could indicate the degree of concentration of the black liquor.

The panel shown in Fig. 1 is known as a partial graphic, i.e., not all the instruments are mounted directly in the flow diagram. Indicating gauges for certain levels and flows are inserted in the diagram, while recording and indicating controllers are mounted below the diagram. In the full graphic type *all* indicators and recorders are placed directly in the flow diagram.

Points of application of the instruments mounted below the diagram in Fig. 1 are identified by various shaped and colored symbols mounted both on the flow diagram and on the nameplates of the instruments. A square on the nameplates of the consistency controller at the extreme left, for example, matches an identically colored square immediately next to the blow tank. A quick look at the flow diagram will show that this instrument operates a valve controlling the flow of dilution liquor to the blow tank. Signal lights on the flow diagram indicate operation of various pump and agitator drive motors.

Graphic panels custom engineered

In every instance, graphic panels are custom engineered for each specific application. This is evidenced by the panel shown in Fig. 2 which, while it controls a washer line almost identical to that illustrated in Fig. 1, differs materially both in appearance and in number and types of instruments used.

The reason for this, of course, is that personal preferences vary from mill to mill as to what instruments should be used, and how these various instruments and control accessories should be mounted on the panel.

If he decides to install a graphic panel, the mill man of today can choose from a wide variety of conventional and miniature instruments, and can have the panel designed to his own specifications. He can select either a full graphic or a partial graphic, and can go into as much detail as he wishes. For example, he can equip any or all of the valves on the flow diagram with position indicators which tell at a glance the position of the valve plugs.

Are graphic panels radically new?

The answer to this is "no." There is no graphic panel type process control system that cannot be duplicated by instruments mounted on a conventional master control panel. It is true that recent years have seen the development of faster and more sensitive measuring and controlling instruments—typical examples are the mercuryless flow transmitter, and the pneumatic proportional-plus-reset control unit that has been physically separated from the measuring instrument and can be mounted directly on the control valve.

However, these developments were brought about by the needs of certain industrial processors, chiefly in the petroleum and chemical fields, for a flow measuring device capable of detecting the smallest variations in flow, and a control unit that would react almost instantaneously to these minute changes. The graphic panel had nothing to do with their evolution.

Miniature indicators and recorders, while designed specifically for graphic panel use, perform exactly the same functions as their larger brothers, but require considerably less space in which to perform them.

Although the graphic panel gives the central control panel a "new look," the fundamental principles of instrumentation required to achieve a panel of this form have been known and practiced in a somewhat different form for a number of years. Actually, the graphic panel is simply the result of applying an artistic dress to remote automatic control.

Essentially, the graphic panel is composed of a number of pneumatic receivers actuated by pneumatic transmitters mounted near the various points of measurement. Some, shown mounted in the flow diagrams of Figs. 1 and 2, are circular dial-type indicating gauges (mounted in flow lines), or rectangular shaped indicating gauges (mounted in blow tanks, liquor storage tanks, and some of the washers). Others, as shown in Figs. 3 and 4, supply either indication or record of the process variable and, in addition, provide indication not only of the set point of a remotely located controller, but also of the controlled air or air-to-valve pressure on either automatic or manual control. They also include a means of adjusting the controller set point, of switching from automatic to

manual control, and of manually operating the control valve.

These pneumatic receivers are not limited to use with any specific variable such as temperature or pressure. They can be used for the measurement of any variable as long as the primary measuring instrument is a pneumatic transmitter.

Neither are they limited to use on graphic panels. Should an occasion arise where it is desirable to have indication or record of a variable along with remote index setting and manual-automatic switching facilities, but where panel space is at a premium, the miniature indicator or recorder frequently supplies the solution to the problem.

Use in a paper mill

While, under certain conditions, graphic panels do offer distinct advantages, it is in every case necessary to weigh these advantages against the additional initial cost of a graphic over a conventional panel before reaching a decision.

Generally speaking, a graphic panel is helpful when the process is a continuous one—when equipment is located some distance from the control panel—and when a number of interrelated pieces of equipment go to make up the over-all process. The brown stock washing lines shown in Figs. 1 and 2 serve as excellent examples. The operator at his control panel may be several hundred yards from the blow tank or washed stock storage chest. The washers themselves may be half a block away from him, while the black liquor storage tanks may be two or three floors below him. And yet, though physically separated from all these pieces of equipment, he can glance at the flow diagram and at its associated instruments and determine immediately whether or not every piece of equipment is functioning properly.

To the mill that is well staffed with skilled operators this advantage hasn't too much significance. However, to the mill that is expanding its processing facilities, and is forced to operate with a skeleton crew of skilled operators, and at the same time train new operators, the advantages discussed above have some real meaning. For example, a *skilled* operator who saw the blow tank level, as measured by an instrument on a conventional panel, falling dangerously low, would realize at once that the entire washer line would soon be affected unless some readjustments were made.

The *untrained* operator, on the other hand, is hardly likely to react so quickly. He sees the pen on the chart of one instrument falling way below its normal position, but he may have to do a considerable amount of thinking, and even go to someone and ask a question or two before he realizes what is happening. By the time he does realize the situation, it's likely to be too late to do anything about it.

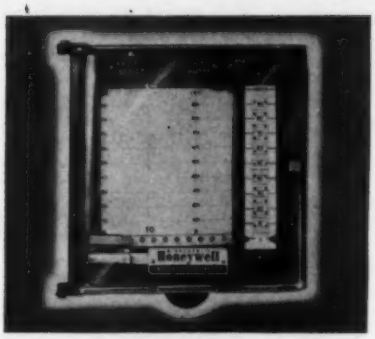


Figure 3—Miniature pneumatic receiver-recorder, with provisions for remote index setting and manual-automatic switching; face dimensions approximate 5" by 5"

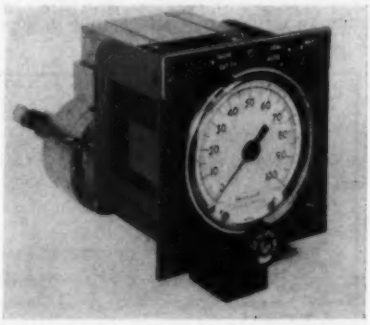


Figure 4—Miniature pneumatic indicating receiver, with provisions for remote index setting and manual automatic switching; face dimensions approximate 5" by 5"

With a graphic panel, the relationship of one piece of processing equipment to another is so clearly depicted that even a new and untrained operator can quickly see what will happen to the washer line if the blow tank is allowed to become empty. His advance to the status of trained operator is hastened because the pictorial flow diagram, in reality the entire washing system in miniature, is right in front of him, constantly reminding him of the flows of stock, water, and wash liquor through the system, as well as of the relationship between various pieces of process equipment.

On batch processing such as in the digester house, the graphic panel ordinarily has little to offer other than improved appearance of the control panel. Even this can not be set down as a hard and fast rule, however, for under certain conditions the graphic panel may prove helpful here. For example, in a mill employing the Chemipulp process involving forced circulation and the use of high and low pressure accumulators it is conceivable that a graphic panel, including possibly all or part of the acid making equipment, might be practical.

In the recovery plant, with all its interrelated phases of the recovery process, a graphic panel might, under certain conditions, be justified. Similarly, in the multi-stage bleach plant, with its widely separated processing equipment, the training of operators can be quite a problem, and a graphic panel can fill a real need.

The question is often asked: How much more expensive will a graphic panel for a certain process control system be than a conventional panel for the same process? Unfortunately, it is impossible to generalize and say that the graphic will cost one-tenth or one-fourth again as much as the conventional. It is impossible simply because the graphic panel is custom-engineered to the user's specifications right down to the smallest detail, and because two users seldom specify exactly the same type panel.

For example, one user may want the flow lines and processing equipment painted right on the panel. A second user will specify processing equipment cut out of plywood or some similar material and mounted on the panel. He may want flow lines of plastic or anodized aluminum. One may want all pumps, heat exchangers, etc., shown in considerable detail, while another may want them left out completely. On some occasions the specifications may call for the use of fluorescent paint on the panel and fluorescent ink in the pens of the recording instruments.

And so, a comparison must be made between each individual graphic panel and its conventional counterpart. Any attempt to generalize must of necessity imply that the graphic panel is, to a great extent, a standardized piece of equipment. If this were so, the graphic would lose one of its important advantages—the fact that it is custom engineered to suit the requirements of every user.

Summary

In summation, there is no rule of thumb or empirical method of determining when and where to use a graphic panel. Each case must be studied on its own merits, and a decision reached after a careful evaluation of all factors involved. Among the factors that should be considered are the following. If the answer to each of these is "yes," a graphic panel will probably, all other things having been considered, be a good investment:

1. Is the process to be controlled a continuous one?
2. Is it made up of a number of interrelated pieces of processing equipment?
3. Are some of these pieces of equipment located quite a distance from the central control panel?
4. Is the training of new operators a significant factor?
5. Will intended expansion of processing facilities seriously overtax available skilled operators?

How to prevent equipment "down-time" through . . .

Maintenance of electric controllers

L. E. MARKLE
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Westinghouse Electric Corp.

MAINTAINING YOUR ELECTRIC motor controllers prevents expensive repairs and costly equipment "down-time." For good maintenance, these considerations are important:

1. The first and most important requisite of good maintenance is safety to personnel. Safety is accomplished by enclosing, guarding, or remotely locating apparatus to avoid personal contact—and by disconnecting all power before touching or repairing any apparatus.

2. The initial installation should be well made. All parts should have ample capacity. Installation work and wiring connections should be well done. Tests should be made to prove the adequacy of the equipment and installation before final acceptance is granted by ultimate user.

3. An adequate supply of correct renewal parts should be available for prompt use when replacements are necessary. Renewal parts should be obtained from the manufacturer of the original equipment to be sure that the parts are correctly made.

4. A systematic and regular plan of inspection should be arranged to keep all equipment in good operating condition. Such a plan provides preventive maintenance.

Preventive maintenance

Some suggestions for good preventive maintenance are:

1. Personnel should be capable and alert, trained and prepared to make repairs when the need is first observed.

2. Regular inspections of equipment should be made frequently enough to prevent serious trouble from developing.

3. If extensive repairs are required, the inspector should report them immediately—initiating plans for the work as soon as possible.

4. Records indicate which installations are most troublesome, what repairs most frequently needed. They minimize interruption of service when a major maintenance job must be done. And records show whether or not maintenance costs are excessive. Any record that keeps the desired maintenance information in good order is satisfactory. It should be a convenient record, easily maintained. Maintenance personnel soon will know what type of record best suits their needs.

A suggested record form is shown in Fig. 1. Since controllers and motors are closely associated, this record includes information on both.

CONTROLLERS

No. .....
Location .....
Manufacturer..... Class.....
H.P..... Voltage..... Phase..... Cycle.....
Style No..... Serial No.....
Operating Coil
Style No.....
Transformer
Style No.....
Resistor
Style No.....
Style No.
of Contacts
Stationary .....
Moving .....

MOTOR

No. .....
Location .....
Manufacturer..... Type.....
H.P..... Voltage..... Phase.....
Cycle..... Speed..... R.P.M.....
Serial No.....
Style No.....
Frame No. .....
Style of Motor Bearings:
Front..... Rear.....
Pulley Dia..... Face.....
Bore..... Key Way.....
Style No. Brushes.....
Brushes..... Per Set.....

CONTROLLER HISTORY

MOTOR HISTORY

Fig. 1—Sample record: controller and motor maintenance information

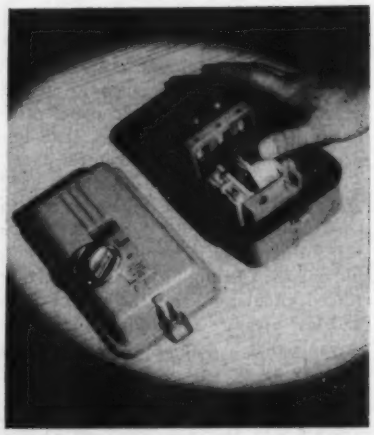


Fig. 2—Gasketed motor starter for polyphase induction motors

Controller enclosures

Enclosures Protect Personnel and Controllers—Most controllers are mounted in some kind of metal enclosure. This may be done to protect personnel from live parts, or it may be desirable because of local conditions.

The most common enclosure is a sheet metal one that encloses all live parts. It may be ventilated or non-ventilated.

Dusty Atmospheres—For cement dust, coal dust, and locations where dirty atmospheric conditions exist, dust-tight enclosures will reduce the maintenance on controller parts. These encolsures require gaskets and are so made that no dust or dirt can enter them (see Fig. 2).

Wet Locations—Weather-resistant, drip-tight, water-tight, and submersible-type enclosures are necessary where the corresponding service conditions are factors in maintenance requirements.

Hazardous Locations—For hazardous locations such as mines, refineries, cleaning plants, or wherever explosive atmospheres are present, the enclosures are of heavy construction. They are so designed that they will withstand explosions of the gases within the enclosure without damage to the enclosure and without permitting any flames to emerge from it to cause external fires and explosions.

Oil-immersed controllers also are used to prevent explosions in dangerous locations.

Corrosive Atmospheres—Where acid fumes or other highly corrosive atmospheres exist, maintenance work will be minimized if the controller parts are immersed in oil, and the enclosure is protected by a suitable finish.

Clean controllers require less maintenance

Very few industrial controllers operate in clean places. Dust, dirt, oil and mois-

Condensed from a forthcoming edition of the book *Controllers for Industrial Motors*, by L. E. Markle and H. D. James, published by McGraw-Hill Book Company.

Fig. 3—Controller should be accessible for ease of maintenance

Fig. 4—Contact surface worn away by mechanical wear, not electrical burning

Fig. 5—Contact surface worn away through electrical burning

ture—separately or in combination with each other—all create maintenance work. They reduce insulating distance across otherwise clean and dry surfaces. They collect dust and dirt that may cause sluggish mechanical action of electrical devices.

Accumulations of dust and dirt should be removed regularly either by vacuum or by compressed air. (Excessive air pressures should be avoided because sharp, small particles may be driven into some insulating materials.) Special attention may be required to remove the metallic dust that collects and adheres to the magnetized parts of the controller. Dirt, oil, and moisture sometimes are most easily removed by wiping with cloths and suitable solvents.

Moisture due to condensation may collect within an enclosure. Drainage holes are sometimes acceptable to relieve this condition. Heaters often are used to prevent moisture by condensation. The heaters are most essential when the controller is idle. When in operation, the coils and resistors within the enclosure will usually provide enough heat to prevent condensation.

Accessibility

For inspection and easy repair work, all parts should be made as accessible as possible. It should be possible to renew contacts, coils, springs, and other important parts quickly and with few tools. Installations should be arranged so that all units are accessible for maintenance work (see Fig. 3).

Contacts

Every time contacts open or close they are subject to mechanical wear and electrical burning. Contact parts, therefore, are itmes that may require considerable maintenance depending on operating conditions. The mechanical wear of contacts that operate every second may be more serious than the electrical burning (see Fig. 4, 5).

Contact Materials—Contacts are generally made of copper or silver. Certain other materials can be used for special applications but should be recommended by the manufacturer. These materials usually have higher resistance and less current-carrying ability than copper or silver. Large contacts for heavy currents are almost always made of copper. They may use silver sections or inserts at the place where final contact is made to improve current-carrying ability or reduce heating. Silver contacts are generally used on the small current-carrying contacts of relays, electrical interlocks, push-buttons, thermostats, etc.

Contact Surfaces—Contacts should be kept clean. This is especially true of copper contacts because the discoloration that soon appears on clean copper is not a good electrical conductor. It therefore increases the contact resistance and is often the cause of serious heating of contacts. When contacts are renewed, it is important to clean the new contact, if it is discolored, and the surface against which it is mounted.

The slight rubbing action and burning that occur during normal good operation generally will keep the contact surfaces clean enough for good service. Contacts that seldom open or close, however, readily will accumulate the thin discolored surface that may cause heating.

The dense discoloration that soon appears on clean silver is a relatively good electrical conductor. It is not so necessary, therefore, to keep silver contacts clean except for appearance.

Burned Contacts—When contacts carrying excessive currents are closed or opened, or when contact motion is sluggish, the contact surfaces may be severely burned. If this burning causes deep pits or craters—or a very roughly burned surface—both the stationary and moving contacts should be renewed.

It is not essential or even desirable to have contact surfaces entirely smooth. Slightly roughened surfaces that appear during normal good operation, if clean, provide better contact area than smooth surfaces. Contacts with surfaces comparable to very coarse sandpaper may be considered in good condition.

Contacts that are dirty or excessively rough should be cleaned and smoothed with sandpaper (see Fig. 6). A fine file may be used, but be sure to maintain the true surface shape or contour of the original contact. The designer often spends much time and effort to determine the best contact shape. Changing the original shape by careless filing will leave high points or edges that may overheat. Emery paper should not be used to clean contacts. It is an electrical conductor. Furthermore, some particles become imbedded in the contact surfaces and cause unnecessary wear.

Worn Contacts and Contact Pressures—As contacts wear, the material in them gradually disappears because of both mechanical wear and electrical burning. During the wearing process the contact pressures decrease. This affects the current carrying ability of the contacts and, if allowed to get too low, will cause overheating of the contacts. A small contact with suitable pressure will carry current with less heating than a large contact with little or no pressure. Reasonable provisions are made for the wearing of contacts when the original designs are made, but replacements eventually will be necessary. Manufacturers will furnish information on correct contact pressures for their devices. The contact pressures may be reduced either because of worn contacts or damaged contact springs. If contact springs have been overheated, they may be unable to provide sufficient contact pressure because the material has been weakened by the overheating. Contact pressures should be checked and maintained within

Fig. 6—Severe burns to a contact caused by interrupting an excessive current

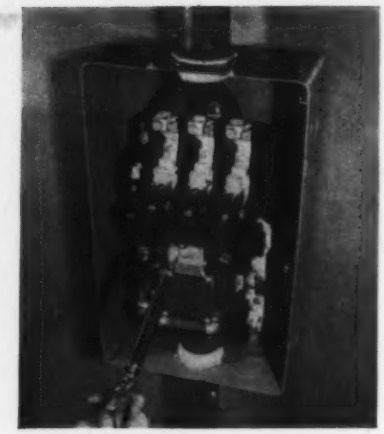


Fig. 7—Measuring contact spring pressure

Fig. 8—Replacing arc-rupturing parts, always return to proper position

suitable limits (see Fig. 7). Always replace both moving and stationary contacts.

Loose Contacts—Any loose electrical connection eventually will cause trouble. The bolts or fastening devices that hold contacts in place always should be tight. Normal expansion and contraction of metals due to temperature changes or excessive vibration will cause bolts or nuts to become loose. Frequent checking for loose contacts is advisable.

Oil-Immersed Contacts—The life of oil-immersed contacts is generally shorter than that of contacts operating in air. Frequent inspection of oil-immersed contacts is important.

Welding of Contacts—Few contacts close without some bounce or rebound when they first come together. This is due to the reaction of the contact springs as they are compressed to provide the final contact pressure. When the contacts bounce they may separate. At this time the contacts are carrying current and, even though the separation be very small, an arc is created. This arc may cause sharp projections of burned or roughened contact surfaces to overheat and may weld or "freeze" the contact surfaces together. Other causes of contact welding are excessive current when contacts close or open, insufficient contact pressure, sluggish operation either when closing or opening, and momentary closure of contacts with little or no pressure applied.

Silver contacts will weld more readily than copper ones. Well-designed contacts, properly applied, reduce this hazard to a minimum.

Contactor and relay coils

Coils provide the electro-magnetic pull that causes the contacts of relays and contactors to open or close. Series coils generally carry heavy currents and have relatively few turns of rather heavy copper. Shunt coils have many turns of insulated wire. They are generally impregnated in a vacuum or under pressure with insulating compounds and are covered with insulating tapes or materials. The impregnating compounds produce a firm but resilient binding material that prevents cracks when temperature changes occur. The impregnation process eliminates air pockets within the winding—making the coil a solid mass that is better able to radiate heat and less subject to mechanical injury.

Operating Voltages—Shunt coils for a-c devices are designed to close them at 85 per cent of rated voltage. Coils for d-c devices will close them at 80 per cent normal voltage. Any coil may be expected to withstand 110 per cent rated voltage without overheating.

Open-Circuited Coils—A coil with an open circuit will not operate the contactor or relay. The questionable coil should be replaced immediately by one that is known to be satisfactory. The questionable coil then can be checked for open circuits.

Short-Circuited Coils—If some turns of a coil become short-circuited, the resistance of the coil will be reduced and more current then passes through the coil. The increased current will cause higher operating coil temperatures and frequently causes coil burnouts.

Over-voltage—Coils should be operated at rated voltage. Overvoltage on coils causes them to operate at a higher temperature that unnecessarily shortens coil life. Overvoltage also operates the contactor or relay with unnecessary force, causing more mechanical wear and bounce when closing.

Under-voltage—Undervoltage on coils causes contactors and relays to operate sluggishly. The contact tips may touch, but the coils may be unable completely to close the contacts against the contact spring pressure. Under these conditions, the contact pressure is below normal and the contacts may overheat and weld together.

Closing and Operating Currents—Due to the magnetic air-gap and the characteristics of a-c circuits, the coil current of an a-c contactor is much higher while the contactor is closing and the air-gap is larger than after the contactor has closed and the air-gap is zero. Since the closing time is short, a-c coils are designed to withstand the closed conditions. They soon will overheat if the unit is blocked, or if the voltage is too low to close it and the coil remains energized with the large air-gap in the magnetic circuit. Freely operating parts will avoid such coil burnouts. D-c coils are not subject to these conditions because the coil currents are constant at all times.

Arc rupturing parts

When contacts are expected to open circuits carrying currents that are difficult to interrupt, they are equipped with arc-rupturing parts. The arc-rupturing parts generally surround the contacts and must be so made that they are easily moved out of position, or removed entirely to inspect and replace both moving and stationary contacts. To be effective, the arc-rupturing parts must be in a definite position with respect to the contacts. Hence the arc-rupturing parts always should be returned to the proper position if removed for any reason (see Fig. 8).

Shunts

The fine strands of flexible shunts sometimes break where the shunt bends. The unbroken strands must then carry the entire current. If many strands break, the unbroken ones become overloaded; they overheat and eventually burn. Frayed shunts should be replaced.

Fig. 9—Knife-edge bearings in use on a controller

Fig. 10—Periodical checking of resistor terminals for tightness

Fig. 11—Using a thermometer for measuring controller coil temperature

Bearings

Contactor and relay bearings are designed to require no lubrication, except for bearings of master switches, drum controllers and similar units. If lubricated, the accumulation of oil and dirt in contactors on relays may cause sluggish mechanical action that impairs the arc-rupturing qualities of the device or causes welding of the contacts.

The moving parts of contactors and relays should move freely in bearing surfaces without any evidence of tightness or friction. Periodic inspections to avoid friction in the moving parts are desirable.

Devices sometimes move vertically and therefore have no turning motion. The motion must be guided, and the guiding surfaces are comparable to bearing surfaces. Friction or magnetic sticking at these surfaces should be avoided.

Some designs, see Fig. 9, use knife-edge bearings. Here the opening and closing action of the device "wipes" the bearing surface, keeping it clean.

Magnetic sticking

When operating coils are de-energized, some residual magnetism remains in the magnetic circuit. This residual magnetism sometimes is strong enough to hold the device closed after the coil is de-energized. This condition occurs most frequently on small devices on which contact spring pressures and moving parts are light. Magnetic sticking causes erratic, unsatisfatory, and sometimes dangerous operation. It can be avoided by adding a non-magnetic shim in the magnetic circuit.

Dashpots

Air or oil dashpots are used to retard motions. They are machined to close clearances and must be kept clean and free to move. The proper amount and kind of oil always should be kept in oil dashpots. Since the viscosity of oil changes with temperature, substitute oils should not be used.

Noisy contactors and relays

When the voltage on the coil of an a-c contactor or relay passes through zero, its magnetic pull or holding power is zero and the device starts to open. The voltage, however, is soon effective in the opposite direction and the device is again pulled closed. This operation causes a humming noise in any a-c operated device—and a decided chattering noise in a defective unit. The otherwise objectionable chattering is eliminated, and the device is kept closed by the use of a shading coil, usually imbedded in the laminated magnetic circuit of the device. Such a coil can be seen in Fig. 3. The shading coil produces enough out-of-phase-flux to provide holding power to maintain the device closed during the short period when the main flux is zero. Even with shading coils in use, the air-gap surfaces must be free from dirt and well fitted to avoid objectionable noise. Broken shading coils are ineffective and cause noisy operation.

For quiet operation of a-c contactors, it is necessary to provide well-fitted surfaces at the air gap. Any dirt in this area introduces a greater air-gap when the unit is closed, increases the duty imposed on the shading coil, and results in more noisy operation. To prevent rusting of the fitted surfaces at the air-gap, these devices are often shipped with a small amount of grease or oil on them. This lubricaion may cause a "seal" that makes them sticky and sluggish in opening when first put into service. These surfaces, therefore, should be wiped clean before the units are placed in service.

D-c coils are not subject to a zero voltage condition, hence they are always quiet. For this reason, a-c current-carrying contactors equipped with d-c operating coils will operate quietly.

Loose connections of any kind should always be avoided on electrical circuits and apparatus. An open circuit or an unreliable one may cause much lost time and production because they are often very difficult to find.

Loose connections

A loose connection causes a poor contact of high resistance generating heat. The copper oxide or discoloration increases the resistance of the contact surface, causing still more heating. The effect is always cumulative, and the heating increases until the parts overheat, deteriorate, or burn.

A loose connection on a thermally operated device, such as the heater of a thermal overload relay, may, because of the external heat developed near the heater, cause the overload relay to trip and stop a motor when the motor is not overloaded.

Loose connections frequently develop on the terminals of resistors (see Fig. 10), because the alternate heating and cooling of resistors cause temperature changes enough to loosen the bolts or nuts that clamp the connections to the resistor terminals. Excessive vibrations also may cause loose connections. The fact that a connection was once tight is no assurance that it will remain tight. Periodic inspections are advisable.

Excessive temperatures

Overheated parts always indicate trouble. It is, however, often difficult to know when temperatures are excessive.

Resistors are operated safely at 350C rise above ambient temperature, but insulated coils generally are resricted to 85C above ambient. Solid copper contacts are limited to a rise of 65C and copper bus work to 50C rise.

Copper parts that are very discolored have been—or are—too hot. When in doubt, temperature should be measured by thermometer or by other means (see

Fig. 11). It is best to know what the permissible temperature is and then measure it.

Thermally-operated overload relays should be in approximately the same ambient temperature as the motors they protect. If the relay is in a higher ambient temperature than the motor, it will trip when the motor is not overloaded. If the relay is in the lower ambient temperature, it may not trip in time to protect the motor. If the ambient temperatures must be different, some compensation for the difference can be made by proper selection of the overload relay heaters, or by providing a relay that compensates for the difference.

Grounds

Grounds are both useful and undesirable. The desirable ones are maintained easily because they require only good contact connections. An unexpected ground, however, is a serious personnel hazard.

Constant vigilance is required to prevent and eliminate undesirable grounds. They cause operating troubles, erratic, and dangerous operating circuits. Because of them motors may start unexpectedly; motors may not stop when they should; overload and other protective features may be made ineffective.

Grounds often occur in pushbutton boxes or similar confined spaces, where stray strands of wire may make contact at incorrect places. They occur when wires become chafed due to vibration on rough edges, such as conduit entrances. Conduits sometimes become wet from condensation or other reasons, and the insulation on the wires becomes watersoaked and of low insulating value. Conduits should, therefore be installed so that moisture within them will always drain away. It sometimes may be necessary to remove the wires, clean the conduits, and install new wiring. Clean and dry conditions always reduce maintenance.

Summary

The following points are important for good maintenance:

1. Do everything possible for the safety of personnel.
2. Initial installation should be tested and proved satisfactory before it is accepted.
3. An adequate supply of correct renewal parts should be available.
4. A systematic program of inspection and maintenance work should be used.
5. Enclosures should be chosen for the operating conditions.
6. Keep controllers clean and dry.
7. Replace contacts that are worn very thin or badly burned and pitted. Replace contacts by pairs.
8. Maintain correct contact pressures.
9. Contacts should be kept clean. Do not change contact shape by rough filing or grinding.
10. Keep contacts and all connections tight.
11. Do not oil contactor or relay bearings, but keep these units clean and with no friction in the moving parts.
12. Operate coils at rated voltage. Both overvoltage and undervoltage conditions are undesirable.
13. Keep arc-rupturing parts in good condition and in correct operating positions.
14. Replace frayed and worn shunts.
15. Keep all dashpots clean. Be sure oil dashpots have correct oil in them.
16. Correct conditions that cause excessive temperatures. Measure the temperature if in doubt about overheating.
17. Be alert for undesirable grounds on all circuits and eliminate them.

Damage liability in the paper industry

Guides to legal riddles not infrequently encountered in everyday business. . . . Here are some of the answers to questions most frequently asked by paper industry executives of their legal counsel

LEO T. PARKER
Attorney at Law

A READER ASKED THIS LEGAL QUESTION: "When is a seller of paper liable to a purchaser for deceit or fraudulent statements?"

According to a recent higher court, to successfully maintain a suit for deceit the buyer must prove (1) that the seller made a false representation to the purchaser believing that the purchaser would act upon it; (2) that such representation was false, and the seller knew it to be false, and (3) that the purchaser believing such representation to be true actually acted upon it and was thereby damaged.

If none of these elements is proven, the seller is not liable to the purchaser on the ground of fraud. On the other hand, if the purchaser convinces a jury that all elements were present he can recover damages from the seller.

For example, in Fischetto Paper Mill Supply, Inc. v. Quigley Company, Inc., 69 Atl. (2d) 318, a purchaser of paper filed a suit against the Fischetto Paper Mill Supply Co. alleging these facts. The former had purchased and paid for many shipments of paper for a long time, and during this period he was defrauded by the seller because the weights of the various shipments were overstated in the invoices. The purchaser testified that these overpayments amounted to approximately $15,000. The jury believed the testimony presented by the purchaser and compromised the verdict to $9,449.62 in favor of the purchaser. The court said:

"The intent to defraud, we think, was amply proved, and there was direct testimony as to the reliance upon the representations made. . . . Where fair minded men might honestly differ as to the conclusions to be drawn from the proofs, the questions at issue should be submitted to the jury."

Check dishonored

Considerable discussion has arisen from time to time over the legal question: "What is the actual value of a bank check which the payee has dishonored?" The answer is: The check always is worth its full value.

For example, in International Paper Co. v. Rivers, 35 So. (2d) 677, it was shown that one Rivers and the International Paper Co. became involved with a check drawn on a bank for $1,080 for trees cut. This check was dishonored by the bank on which it was drawn for insufficiency of funds. The court held:

"A check is an unconditional order on the bank to pay to the payee, or his order, the amount written therein. It is an honor obligation and should always be treated as such."

In other words, this court held that a dishonored bank check never pays off a debt, although the payee gives a receipt "in full payment" to the debtor.

Within scope of employment

An official of a paper company asked this question: "I know that a paper company never is liable for injuries sustained by an employee who is injured outside the scope of his employment.

But what does this mean in plain words?"

Modern higher courts consistently hold that an employee does not act "outside the scope of his employment" when he does anything regularly while working and his employer knows of irregular acts. For example, according to a late higher court decision, an employee is "within the scope of his employment" when leaving a paper plant heater room for a smoke.

For illustration, in Waskevitz v. Clifton Paper Board Co., 71 Atl. (2d) 646, the testimony showed that the paper breaker heater room contained machines used in the processing of the pulp into paper, and that the room was hot and humid. The employees in this room would customarily go to an outside door to have a smoke and obtain a breath of fresh air. One day an employee while passing the hydro-pulper, to take a smoke, accidentally fell in and was killed.

The employer argued that compensation under the State Workmen's Compensation Act could not be awarded the dependents of the employee, because he was not killed while acting "within the scope of the employment."

However, the higher court awarded compensation, saying that since the employer had knowledge that employees went outside the hot and humid room to smoke, the employees were "within the scope of their employment" when doing so.

No compensation

Originally, the courts recognized that the unemployment compensation laws of various states were enacted for a beneficent purpose and should be construed liberally *in favor* of unemployed persons. Recently the higher courts have taken a different view and decided that unemployment compensation laws are intended to relieve consequences and vicissitudes of *unavoidable* unemployment. Hence, an employee who refuses to *look* for work, or take a job he can normally perform, will not be awarded compensation.

For example, in Department of Industrial Relations v. Wall, 41 So. (2d) 611, it was shown an employee worked in the same capacity in a plant for about six months when he was transferred to another department, and with the same scale of pay. The employee claimed that he was unable to do the "heavy" work and filed an application for compensation under the State Workmen's Unemployment Act. The higher court refused to award compensation, and said:

"The unemployment compensation law does not contemplate that a job must seek out the man and coax him to come to work. It presupposes some effort on the part of the employee to secure work. . . . The unemployment compensation law was not intended to afford payment of unmerited doles or to provide vacation with pay."

Compromise with injured employee is illegal

A foreman in a paper manufacturing plant asked this question: "Assuming that an injured employee is willing to accept a certain sum of money as a compromise and full settlement for his injury, is it advisable to compromise with the employee and pay him an amount of money which satisfies him?"

According to a recent higher court, a settlement or compromise with an injured employee always is illegal unless *approved* by the state industrial commission.

For illustration, in Gallup v. Western Board and Paper Co., 233 N. W. 184, it was shown an employee was injured while performing his regular duties. A contract to pay compensation was signed by both the paper company and employee. However, the settlement was not approved by the Industrial Commission. Later the employee sued for additional compensation. The paper company's counsel contended that the employee was not entitled to further payments because he had signed a contract and receipt in which he accepted the agreed sum as final payment.

However, since the Industrial Commission had not approved the settlement, the higher court held the contract void and allowed the employee additional compensation, stating the following important law:

"A final settlement contract in this case if approved by the Commission has the effect of determining the amount of compensation, and as this may not be done by the parties themselves, the settlement to be effective, *must be approved by the Commission.* The settlement receipt here was not approved, hence it is idle, and the case as though no receipt has been filed."

Must prove injury

According to a recent higher court, the mere fact that an employee is injured or killed near dangerous machinery is *not* sufficient evidence to justify allowance of compensation or damages for accidental injury or death.

For example, in Annerau v. Ewauna Paper Box Co., 159 Pac. (2d) 215, it was shown that an employee was found dead near a conveyor chain. His dependents sued the employer for compensation under the State Workmen's Compensation Act, contending that the employee had accidentally fallen against the conveyor chain.

Since the dependents could not prove that the employee's death resulted from the alleged accident, the higher court refused to award compensation, saying:

"The only question involved was as to whether or not the injury arose out of and in the course of decedent's employment. . . . He may have fallen on the conveyor chain and injured his head and afterwards dragged himself into the position in which he was found. He was lying on, or in, a low ridge of fuel to the south of the conveyor, and the circumstances are susceptible of the deduction that he collapsed against this ridge."

Consignee is liable

A reader asked this question: "Can a common carrier sue and recover from the consignee freight charges originally due, but not paid by the shipper because of error in computing the freight charges?"

See Fleming and Sons, Inc., v. Gulf, C. & S. F. Railway Co., 187 Fed. (2d) 536. Here a manufacturer shipped to its consignee at Charlestown, W. Va., two carloads of paper and paid the freight rates thereon as computed and charged by the carrier.

This higher court held that a consignee *always* is liable for payment of freight charges due on a shipment of paper. This is so although the shipper paid the full freight charges demanded by the carrier at the time the shipment was made, if the testimony shows that these charges were in error or by mistake.

In the above case the higher court held that where routing directions for freight shipments are ambiguous, the carrier has a duty to either require instructions to be clarified or to treat the directions as *incomplete* because not plainly designating a continuous route. This court also held that where the bills of lading referred to receipt of shipment "by Santa Fe Company" and routing directions were "Santa Fe: C & O" without specification of rate, routing directions were ambiguous, and the initial carrier was required to compute the rate over the cheapest reasonably available route and could not justifiably impose a higher rate on the theory that the words "Santa Fe" meant the entire Santa Fe system.

In other words, where the bill of lading is ambiguous, the initial carrier must ship by the *cheapest* route, and neither the shipper nor the consignee is liable for payment of freight rates of more than the *cheapest* rates.

City is liable

Recently a reader wrote an interesting letter, in part as follows: "About two weeks ago a city sewer broke, and after a big rain water filled the basement of our warehouse and ruined valuable paper stock. The city officials claim the city is not liable for its negligence in 'governmental functions,' the sewer be-

ing in this classification. In your opinion, can we win a suit we intend to file against the city?"

The answer is yes, the company can win the suit if the break resulted from negligence of the city officials. This is so notwithstanding it is generally believed and contended by many municipal officials that maintenance of a sewer system is a governmental function, which relieves the city from liability for negligence of its officials and employees.

For illustration, in City of Mangum v. Garrett, 192 Pac. (2d) 993, a company sued a city to recover damages to its merchandise, including stored paper, caused by a break in a sanitary sewer, whereby the water and refuse from the sewer flooded the basement in the building.

During the trial the company's legal counsel proved that the connection of the company's sewer from the basement of the building to the main line of the city sewer was made under *supervision* of the city; and that the city negligently permitted the main line of the sewer to decay and break and fall in so that it became clogged and stopped up and did not function.

City officials contended that the city could not be held liable because the city performed "governmental functions" in the maintenance of its sewage system. Nevertheless, the lower court held the city liable, and the higher court approved the verdict, saying:

"We have repeatedly held that the maintenance of city sewers is a corporate or proprietary function of the city, as distinguished from a governmental function, and that the city is civilly liable for its failure to maintain sewers. . . . Plaintiff (company) sufficiently stated a cause of action against the city for failure to maintain and repair its sewer, and the trial court correctly advised the jury as to the city's liability in such case."

Carmack amendment

According to a late higher court decision, any lawful holder of a bill of lading issued by the initial carrier pursuant to the Carmack amendment may maintain a suit for damage to such property caused by any *connecting carrier* to whom the goods are delivered.

For illustration, in Newth-Morris Box Corp. v. Pennsylvania Railroad Co., 78 Atl. (2d) 655, it was shown that goods were shipped interstate over a railroad which transported the goods part of the way to the destination and then delivered the goods to another railroad. The original railroad had issued a straight bill of lading to the shipper.

In subsequent litigation the higher court held that the shipper could sue the original railroad for damages to the shipped goods while in transit in view of the Carmack amendment to the Interstate Commerce Act requiring the carrier, receiving the goods for interstate transportation, to be liable to the holder of the bill of lading for loss or damage to the goods. This court said:

"The consignor is the original party to this contract. The Carmack amendment applies the privity of contract rule to interstate shipments. The purpose of that amendment is to permit the person who legally holds the bill of lading to sue the initial carrier in interstate commerce who issued it, even though the damage was done by a connecting carrier."

Prior to the Carmack amendment to the Interstate Commerce Act a shipper whose paper was damaged during interstate transportation had to sue the carrier *in whose custody* it was when the damage occurred. If such carrier was not the one with which the shipment originated, the suit had to be grounded on negligence, and proof frequently was difficult. A shipper had much trouble in determining just where or when the damage occurred. The Carmack amendment required the carrier receiving goods for such transportation to issue a receipt or bill of lading therefor and to be liable "to the lawful holder thereof" for any loss or damage caused by it *or any other carrier* to which such goods might be delivered or over whose lines such property might pass.

For example, in Southern Railway Co. v. Mayer Myers Paper Co., 232 S. W. (2d) 20, it was shown that the Mayer Myers Paper Co. purchased paper from the Kline Paper Stock Co. The latter was to pay the freight charges but through error did not prepay the freight charges.

The carrier did not inform the Mayer Myers Paper Co. that the freight had not been paid. Later the carrier sued the Mayer Myers Paper Co. for the freight charges. In holding the latter liable, the higher court said:

"Under the federal statute the railway company's inadvertent failure to inform the consignee that freight charges had not been paid by the consignor pursuant to contract with consignee did not estop the carrier from collecting such charges."

Patent held valid

Modern higher courts consistently hold that a patentable invention may be comprised of elements that are all old or all new, or partly old and partly new. Of course, no patent may be obtained on an old or well-known device or thing or process, but if a new invention fills a long-felt want and has considerable commercial success, the patent will be held valid.

For example, in Lincoln Stores, Inc., v. Nashua Mfg. Co., 157 Fed. (2d) 154, it was shown that an inventor named Amory filed an application for a patent on a sheet which contained about 20 per cent wool fibers and 80 per cent rayon fibers.

The higher court held this patent valid because it was new and had utility.

Duty toward city firemen

Recently a higher court laid down new law particularly interesting to readers who store paper and like products in warehouses. This court held that where a city fireman enters upon the premises of a paper company in response to the call of duty, the paper company has a duty to warn him of *hidden* dangers.

For example, in Shypulski v. Waldorf Paper Products Co., 45 N. W. (2d) 549, the testimony showed facts as follows: One Shypulski is a city fireman. One evening a large fire broke out in the warehouse of the Waldorf Paper Products Co. Shypulski was on duty at that time and responded to the alarm of fire. Shypulski and other firemen succeeded in extinguishing the fire and thereafter entered the warehouse to make certain that the fire had been entirely extinguished. During the time of the fire and subsequent thereto, officers, agents, and employees of the Waldorf Paper Products Co. were present and observed the actions of the firemen. These persons gave no warning to the firemen about a new wall of concrete blocks. While Shypulski was in the warehouse, the concrete wall collapsed and fell upon Shypulski and other firemen, killing three firemen and seriously injuring Shypulski.

In subsequent litigation, the higher court indicated that the Waldorf Paper Products Co. was liable in damages to Shypulski and the dependents of the deceased firemen. The higher court said:

"On these facts, we are presented with the problem of determining what duty is owed to a fireman who enters upon a landowner's premises in response to a call of duty. Firemen are entitled to be warned of hidden dangers known to the property owner."

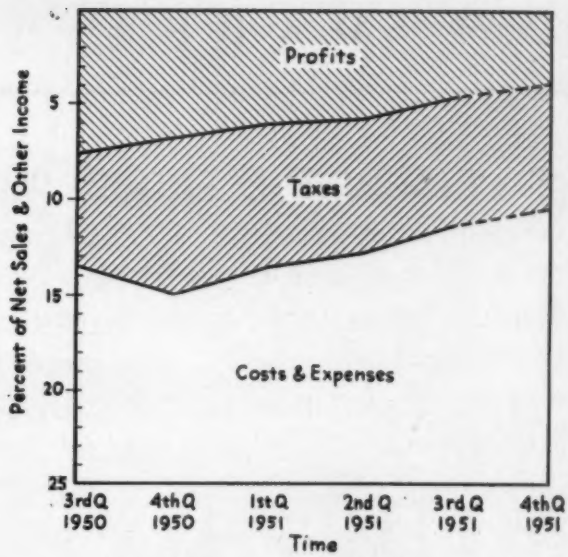
In other words, this higher court held that since the officials of the Waldorf Paper Products Co. knew that the wall was dangerous and could not withstand lateral pressure of any amount, and they had an opportunity to warn the firemen before they entered the building but failed to do so, the paper company was liable in damages.

For comparison see Mulcrone v. Wagner, 4 N. W. (2d) 97, 141 A.L.R. 580. This court clearly held that an owner of a warehouse building owes no duty to keep it in a reasonably safe condition for members of a public fire department. However, if the paper company knows of any dangerous condition not known to the firemen, the company's officials have a legal duty to warn the firemen of this danger.

Paper Mill Power—Part XII

How taxes affect mill improvements

DAVID MOFFAT MYERS
Myers & Addington, New York



Trends of sales expenses in major U. S. corporations over the last five quarters

HOW ARE IMPROVEMENT PROGRAMS influenced by present and probable future business conditions?

The effect of present business conditions, in general, is higher costs and lower profits. The higher costs derive from increases in labor and taxes so that even with greater sales and production, profits can, and often do, go down instead of up in numerous cases.

From tabulated statistics in the latest quarterly financial report of U. S. manufacturing corporations, the third quarter of 1951, I have constructed a chart (see figure) showing the trend of sales and production expenses, taxes, and profits, for the recent five quarters, in relation to total sales and other income for corporations of all asset sizes.

During this period, profits have dropped from 7.62 per cent to 4.65 per cent of total income, and the present trend continues downward. If this profits curve is projected to 4 per cent, it hits this mark before the end of the last quarter of 1951, at which point extension of the tax line indicates 10.5 per cent of the gross income as profits before taxes.

For the purpose of this discussion, these figures will be assumed. It follows that taxes will take 6.5/10.5, or 62 per cent, of gross income. The gross take before taxes is 10.5/89.5, or about 11.7 per cent, of the cost of sales and production.

Thus, $1,000 spent on sales and production brings in a profit before taxes of $117, which becomes $44.50 retainable profit.

In many properly engineered steam and power supply improvements, the return on required expenditures may range from two to six years. Let us observe the effect of a 4-year return.

A thousand dollars thus expended will result in a gross return of $250 a year, which, after taxes on $250 less $50 depreciation allowance (62% × $200 = $124), becomes $126, or 2.83 times the net return available from equal sums expended on production and sales efforts, and the improvement will be written off in 20 years.

If the power improvement returns its cost in six years, the net return is $94; and if in two years, $221 per thousand invested, after taxes, compared as before to $44.50 net return on the same money spent on sales and production.

The above facts warrant special study of all possibilities in the field of improved efficiency which are likely to bring a higher net return than equal sums spent for increased sales and production. When the business cycle reflects a downward trend, the importance of this policy is further augmented.

Savings made by proper modernization, as for example in the cost of 1,000 pounds of steam or of a kilowatt-hour, are the kind which continue to operate both in good times and bad, and during periods of poor business may actually make the difference between red and black on the books.

This is especially true in the paper business, in which power and steam constitute so important an item in the cost of production. Marginal mills may have to shut down, but the efficient ones will have the edge needed for successful competition.

Tax laws permit an owner to charge against expense the cost of an independent study of his power situation. Therefore, the owner's actual out-of-pocket cost for such a survey in the average case is only 38 per cent of the nominal fee.

The current article completes the series "Paper Mill Power" by David Moffat Myers. Mr. Myers, a consultant in the steam and power field for more than 30 years, has shown in this series ways and means of cutting costs and improving efficiency in the production of steam and power.

The first installment, which appeared in May 1951, dealt with the topic, "How to approach today's power problems." Other articles concerned the following subjects: "Low boiler pressure—low power economy" (June); "Why by-product power is cheap power" (July); "Three ways to handle variations in steam and power demand" (August); "How modernized power plant can utilize existing equipment" (September); "Turbine drives for paper machines" (October); "The paper mill boiler plant" (November); "Comparison and selection of fuels" (December); "Power supply—hydro, steam, or purchased" (January 1952); "Conditioning raw water for boiler use" (February), and "The human factor" (March).

Reprints of the series are being made for Myers & Addington, New York, N. Y. A limited quantity is to be made available to the public by this consulting firm.

PAPER SKETCHES

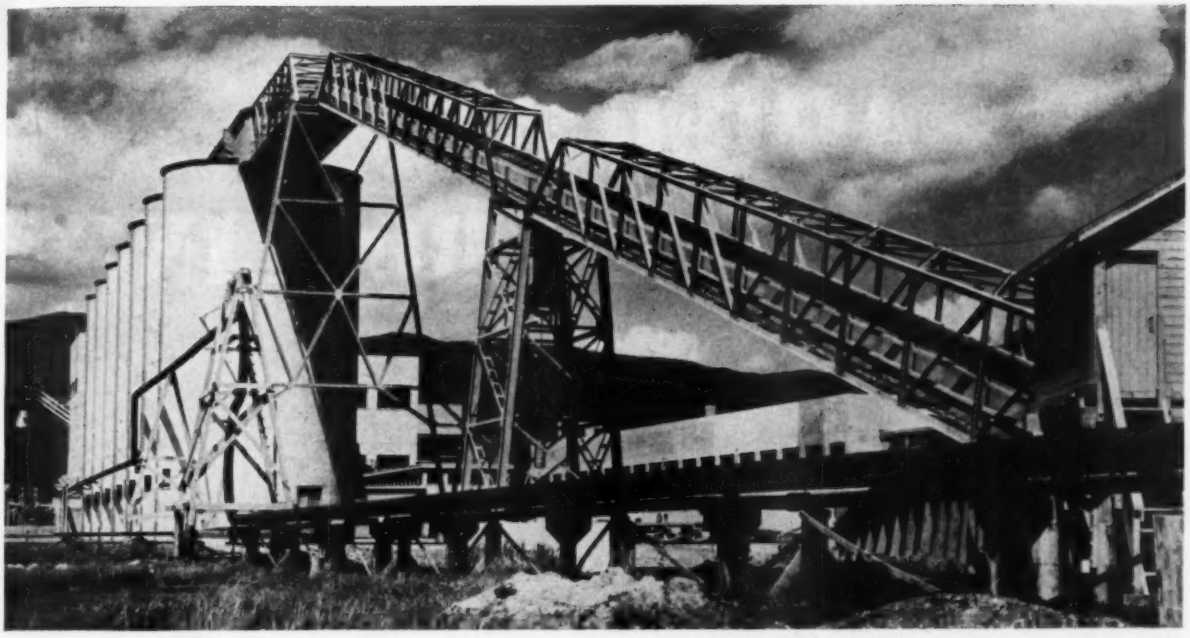
THE CHLORINE-BLEACHED PAPER produced by English papermakers of the early 1800's was so poor in quality that letters written on the substance frequently fell to pieces before reaching their destination . . . An entire edition of 30,000 books printed on such paper in 1818 had virtually disintegrated by 1835. . . .

OILED PAPER instead of glass was commonly used in the windows of European houses of the 1500's . . .

MANY of the architectural ornaments added to England's House of Commons and House of Lords in the 1830's were fashioned from PAPIER MACHE'—!

Odd Bits

Kraft paper is being used as a covering to help make frozen fish keep longer in storage. This paper, frozen tight against the wooden trays, provides the extra protection needed to preserve such fish as tuna for more than a year.



Wood chips are carried to six storage silos in a pulp mill on this Link-Belt 24-in. wide belt conveyor. Side rolls of idlers are set at 45° angle to permit the belt to carry a greater volume of chips per linear foot.

Rely on one source... one responsibility for the best in belt conveyors

LINK-BELT engineering experience plus quality components combine to cut handling costs

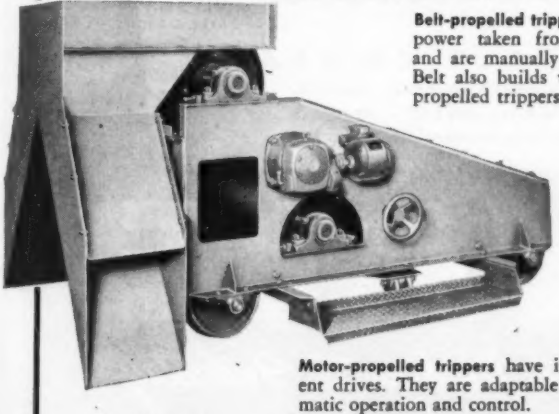
WHETHER you must move a few tons a day or several thousand tons per hour . . . whether the haul is measured in feet or miles—you'll find the answer in belt conveyors at Link-Belt.

Here's a nation-wide engineering organization that will follow through from start to finish—the designing, manufacturing, erecting of conveying equipment. And nowhere can you match Link-Belt's combination of vast application experience . . . complete line of quality components . . . expert coordination of related equipment.

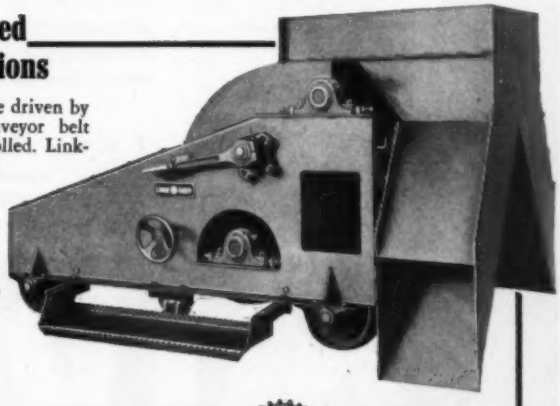
Get all the facts from the Link-Belt office near you. Link-Belt engineers are glad to work with you and your consultants—help you get the finest in belt conveyors.

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, Duluth, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices in principal cities.

LINK-BELT Trippers offer controlled distribution under all conditions



Belt-propelled trippers are driven by power taken from conveyor belt and are manually controlled. Link-Belt also builds winch-propelled trippers.



Motor-propelled trippers have independent drives. They are adaptable to automatic operation and control.

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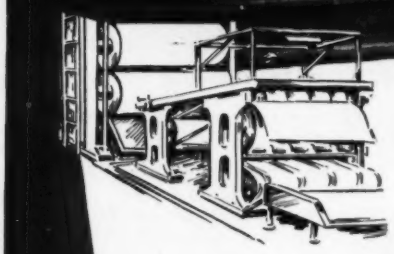
LINK-BELT

BELT CONVEYOR EQUIPMENT

AIMED AT BETTER ROLLING



MIDVALE HARDENED AND GROUND FORGED STEEL MILL ROLLS

Forged steel rolls have been a Midvale specialty for many years, but every new one made is aimed at doing a better job than ever before. Skill and experience of Midvale craftsmen assure rolls built to your most exacting specifications of hardness and finish. Modern equipment and quality control —from furnace to finished roll—produce rolls unsurpassed in quality and performance.

Whatever your needs for heavy equipment in industry Midvale can assure you of precision and performance. Whether it is a roll for your mill . . . roll shells for mining and cement industry . . . pressure vessels for the chemical and petroleum industries . . . rings for turbines and gears . . . or castings and forgings for any industry . . . Midvale can make them to your most exacting specifications.

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PRODUCERS OF FORGINGS, ROLLS, RINGS, CORROSION AND HEAT RESISTING CASTINGS

The Paper Industry Association News

Color and Illumination Discussed by Michigan Superintendents

Modern color schemes for paper mills and the proper illumination for most efficient production were the subjects of addresses presented at the March 21 dinner meeting of the Michigan Division, American Pulp and Paper Mill Superintendents Association. The speakers were L. S. Oyster, maintenance sales supervisor for the Finishes Division of E. I. du Pont de Nemours & Co., and George H. Taylor, electrical engineer for Day Co., New York, N.Y.

Mr. Oyster traced the development of modern color schemes. He said that at a meeting of the National Safety Council and manufacturers of industrial paint, which was held about 10 years ago, high visibility yellow was selected to mark strike-against, stumbling, felling or tripping hazards; alert yellow, to mark portions of machines or equipment that might cut, crush, electrocute or otherwise injure a worker; safety green, to mark first-aid equipment; fire protection red, to mark instruments for combatting fire; precaution blue, to mark electrical controls and equipment under repair, and traffic white, gray or black, to mark facilities for good housekeeping.

Although the use of these six safety colors should be accepted throughout the industry, Mr. Oyster continued, there is considerable latitude in the selection of colors for painting walls, ceilings, floors, and machinery. The functional use of color, very often referred to as "color conditioning," has a profound psychological influence on the morale and productivity of office and production workers. Mr. Oyster's address was illustrated with the sound motion picture, "A Case for Color."

Adequate Lighting Stressed

Speaking on the topic, "Illumination for Paper Mills," Mr. Taylor stated that adequate lighting is not only important for good and efficient seeing, but also for the comfort of men and women at work, that illumination in bright daylight is in order of 10,000 foot-candles—yet one is satisfied with 50 to 60 foot-candles in artificially illuminated plants, and that this 50 to 60 foot-candles compares favorably with the 20 foot-candles that were considered adequate a few years ago.

The speaker further related that the increase in lighting level was made possible by a decrease in the price of fluorescent lamps (amounting to 64 per cent), by an increase of 400 per cent in the life expectancy of fluorescent lamps, and by a 32 per cent increase in light produced in terms of lumens per watt.

Mr. Taylor stated that high foot-candle values do not mean good lighting in all cases; that the psychological effect of dark ceilings and of excessive brightness contrasts may make futile the use of high foot-candle-levels; that 10 to 15 per cent of the light should always be directed to the ceiling for comfort; that excessive contrasts in brightness should be avoided; that a system of preventive maintenance should be set up to insure continuously good illumination, and that fixtures should be cleaned and lamps replaced at regular intervals.

Future Meetings Announced

Michigan Superintendents are planning a joint meeting with the Kalamazoo Valley Section of TAPPI April 17 at the Hotel Harris in Kalamazoo. According to Dr. Alfred H. Nadelman, secretary-treasurer of the Division, the subjects for discussion will include graphic arts and coating. A ladies' night is planned for May 3; there will be no meeting of the Division in June, and the date for the annual sports and field day in July is to be announced later.

Rapid Growth Shown in Annual TAPPI Report

According to the annual report of the national secretary, R. G. Macdonald, TAPPI continued to grow at a rapid rate during 1951. There were 655 individual members elected during the year. A total of 234 resigned or were dropped from membership. On December 31 the individual membership stood at 4,689. There were 12 corporate members elected, while six resigned. The corporate membership at the close of the year was 227. Sustaining members elected in 1951 totaled 12. Seven sustaining members resigned. The sustaining membership on December 31 was 192. Mr. Macdonald presented his report at TAPPI's national meeting in New York in February.

The secretary reviewed the six functional meetings and the annual convention held in 1951. The national meeting attracted 1,500 delegates. Other gatherings were as follows: Second Coating Conference, April 18-20, Boston; Corrugated Combining Conference, May 18, Cleveland; Fundamental Research Conference, September 17-21, Institute of Paper Chemistry, Appleton, Wis.; Fifth Alkaline Pulping Conference, September 26-28, Richmond, Va.; Sixth Engineering Conference, October 15-18, Savannah, Ga., and the Plastics Conference, November 8-9, Syracuse, N.Y.

Chairman of the local sections elected during the year were as follows: Pacific, E. O. Ericsson, Puget Sound Pulp & Timber Co.; Lake States, Alan P. Adrian, Neenah Paper Co.; Delaware Valley, A. S. Erspamer, P. H. Glatfelter Co.; Kalamazoo Valley, John R. Dam, Allied Paper Mills; New England, H. W. Knudson, Hollingsworth & Vose Co.; Ohio, Herbert A. Smith, Mead Corp.; Empire State, J. S. Reichert, E. I. du Pont de Nemours & Co., Inc.; Maine-New Hampshire, George A. Day, Brown Co.; Chicago, Vance V. Vallandigham, Kelco Co., and Lake Erie, William A. Hassele, Container Corp. of America.

Automatic Tension Control was to be demonstrated at the February 1 meeting of the Connecticut Valley Division of the Superintendents Association, held at the Roger Smith Hotel, Holyoke, Mass. Making the demonstration was John Furey of Monkley Corp., Worcester. Principal speaker at the meeting was to be Dr. Allen A. Stockdale of the National Association of Manufacturers.

McCorry Elected Chairman of Pacific Coast Supts.

A. C. McCorry of St. Regis Paper Co., Kraft Pulp Division, Tacoma, Wash., was elected new chairman of the Pacific Coast Division of the Superintendents Association at a meeting November 30. The gathering was held at the New Washington Hotel, Seattle.

Featured during the all-day session were three technical papers and a round-table discussion. W. W. Clarke of Long-

view Fibre Co. presented a paper entitled, "Stock Preparation at the Fourdrinier as an Aid to Save-all Operation." J. Meagher of Fibreboard Products, Inc., Port Angeles, Wash., discussed the operation of suction drum presses on cylinder board machines. Frank Hamilton of Everett Pulp & Paper Co. spoke on the subject, "Machine Coating Presents New Problems to the Superintendents."

Paper mill clothing was the subject of the roundtable discussion. E. P. Barthelmy of Crown Willamette Paper Co., Camas, Wash., was the moderator.

Other Officers Elected

In addition to Mr. McCorry, other officers elected at the meeting include: Gus Ostenson, Crown Willamette Paper Co., first vice chairman; William W. Clarke, Longview Fibre Co., second vice chairman; C. L. Walton, Simpson Logging Co., third vice chairman, and R. Burke Morden, Morden Machines Co., secretary-treasurer.

Included in the day's program were mill visits to Everett Pulp & Paper Co., Everett, Wash.; St. Regis Paper Co., Tacoma; Soundview Pulp Co., Everett; West Tacoma Newsprint Co., West Tacoma, and Weyerhaeuser Pulp Division, Everett.

Serving as toastmaster was L. R. Hartman, Weyerhaeuser Timber Co., who is retiring chairman of the Pacific Coast Division.

OVER-ALL VIEW of the March 17 meeting of Chicago TAPPI, at which Ernest Crocker of Arthur D. Little Laboratories spoke

Nature of Odors Explained at Chicago TAPPI Meeting

Methods by which a scientific knowledge of the various characteristics and effects of odors can be put to advantageous use in the paper industry were explained March 17 at the monthly meeting of Chicago TAPPI. Guest speaker on the program was Ernest Crocker, who is associated with the Arthur D. Little Laboratories in Boston. The title of his address was "The Nature of Odors."

Outlining the basic facts known to scientists regarding the physical and chemical properties of "smells and smelling," Mr. Crocker declared that the sense of smell is not used to its full advantage or appreciation. He said that with the advent of the Pure Food and Drug Laws, the sense of smell is being used less and less for protection; aroma is the important characteristic for present-day requirements.

Whereas there are but four tastes, the speaker continued, there are thousands of different odors. Since nearly all flavors are recognized through the sense of smell and not through taste, it is important that containers must contribute nothing whatever to odor. In the paper industry, Mr. Crocker declared, it must be remembered that cellulose has not been found to have either taste or odor; neither is there flavor to the basic foods —fats, proteins, etc. It is the impurities in food that give it flavor.

Explaining the anatomical characteristics of the human sense of smell, Mr. Crocker declared that any stimulant acts on the sense organs to produce a sensation. In this connection, he employed slides to demonstrate the physical and chemical reactions that take place within the body in the process of smelling. Known as "the Nose" as a result of his 30 years' study of odors, Mr. Crocker said that humans are not capable of efficiently recognizing various odors through ordinary breathing. One has to sniff to properly "throw the air up to the smelling area."

The speaker listed four methods by which various papers may be tested as to their ability for acquiring and retaining odor: (1) by soaking the paper in water, then tasting the water; (2) by enclosing the paper in an air-tight area containing open pans of water and oil, then tasting the liquids; (3) by wrapping an ordinary stick of butter in the paper to be tested, then tasting the outer layer of the butter, and (4) by steaming the paper with the breath, then licking the paper. In general, if paper has taste, that taste is bitterness.

In charge of the meetinng was Vance V. Vallandigham, chairman of the Chicago section. The speaker was introduced by Peter J. Trucano.

Northwest Supts. to Stage Two-Day May Meeting

Factory visits and technical sessions are planned for the May 9-10 meeting of the Northwest Division of the Superintendents Association, which is to be held at the Faust Hotel in Rockford, Ill. Dean Stone of Beloit College and the State Department will be the principal speaker at the luncheon on the opening day.

A tour of the Beloit Iron Works, Beloit, Wis., is planned for the morning of May 10, while on the first day there will be a tour of Woodward Governor Co. A visit to a Rockford furniture factory is on the schedule for wives attending the meeting.

Technical meetings are to be divided into three discussion group sections as follows: wood room and pulp mill, paper machines and finishing, and steam and power. The annual Superintendents Appreciation Dinner will be at the Wagon Wheel near Rockton, Ill.

Static Electricity Discussed at Ohio TAPPI Meeting

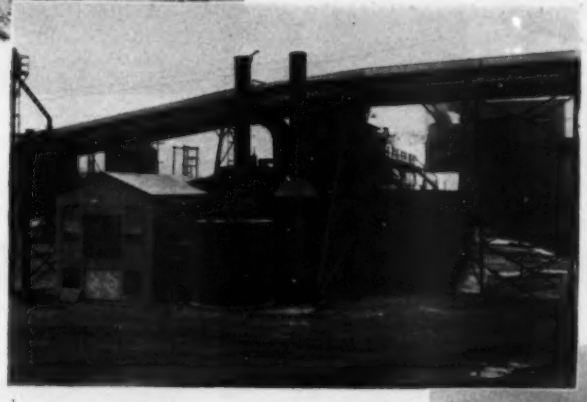
Elements of static electricity, the mechanisms of static generation, and the methods of static elimination were discussed by Lewis E. Walkup at the December 11 meeting of the Ohio Section of TAPPI, which was held at the Battelle Memorial Institute, Columbus. Mr. Walkup is on the staff of the Institute.

Static charges on paper can be generated in two ways, according to Mr. Walkup: (1) by contact electrification, and (2) by induction. Elimination of static in paper can be accomplished only if electrical conductivity is established either in the paper or in the air near the

IDAHO KRAFT MILL

TURNS WASTE WOOD INTO NEW PROFITS

Above: 22-ft. diam. by 24-ft. white liquor clarifier and 22-ft. diam. by 24-ft. lime mud washer built by the Chicago Bridge & Iron Company for Potlatch Forests, Inc. at Lewiston, Idaho.



Left: General view of recausticizing plant showing 15-ft. diam. by 15-ft. storage agitator tank in the left foreground. This unit was built for Potlatch Forests, Inc. by the Chicago Bridge & Iron Company.

GREATER utilization of timber lands has resulted in greater product diversification and new profits for Potlatch Forests, Inc. of Lewiston, Idaho. Instead of burning wood waste resulting from the operation of their white pine saw mill, this progressive company decided to utilize it to make pulp, which is very much in demand. They built a 150-ton bleached kraft pulp and paper mill near the saw mill and are turning the waste wood into machine dried pulp, bleached container board, bleached tag stock, and unbleached kraft.

Playing an important part in the operation of the Potlatch pulp and paper mill are a number of Horton* digesters and other steel plate structures. They were all built to exacting specifications by the Chicago Bridge & Iron Company and, once again, illustrate our versatility in fabricating all types of steel plate equipment for the pulp and paper industry. If your mill is expanding or replacing worn out steel plate structures such as digesters, consider the advantage of our experience. We also have five strategically located plants, and our facilities for stress relieving and x-raying are complete.

Write our nearest office for details. There is no obligation on your part.

**Trade mark registered U.S. Patent Office*

Above: 10-ft. diam. by 10-ft. lime storage tank built of stainless steel at the Lewiston mill. It has a 45 deg. cone bottom and is supported on 4 columns, 17 ft. above the ground.

CHICAGO BRIDGE & IRON COMPANY

Atlanta, 3 ..... 2143 Healey Building
Birmingham, 1 ..... 1511 North 50th Street
Boston, 10 ..... 1026—201 Devonshire Street
Chicago, 4 ..... 2445 McCormick Building
Cleveland, 15 ..... 2267 Guildhall Building
Detroit, 26 ..... 1566 Lafayette Building
Havana ..... 402 Abreu Building
Houston, 2 ..... 2143 C & I Life Building
Los Angeles, 17 ..... 1559 General Petroleum Building
New York, 6 ..... 3350—165 Broadway Building
Philadelphia, 3 ..... 1653—1700 Walnut Street Building
San Francisco, 4 ..... 1547—200 Bush Street
Seattle, 1 ..... 1327 Henry Building
Tulsa, 3 ..... 1651 Hunt Building
Washington 6, D.C. ..... 1138 Cafritz Building

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA. In Canada: HORTON STEEL WORKS, LIMITED, FORT ERIE, ONT.

Specialty Papers Co.

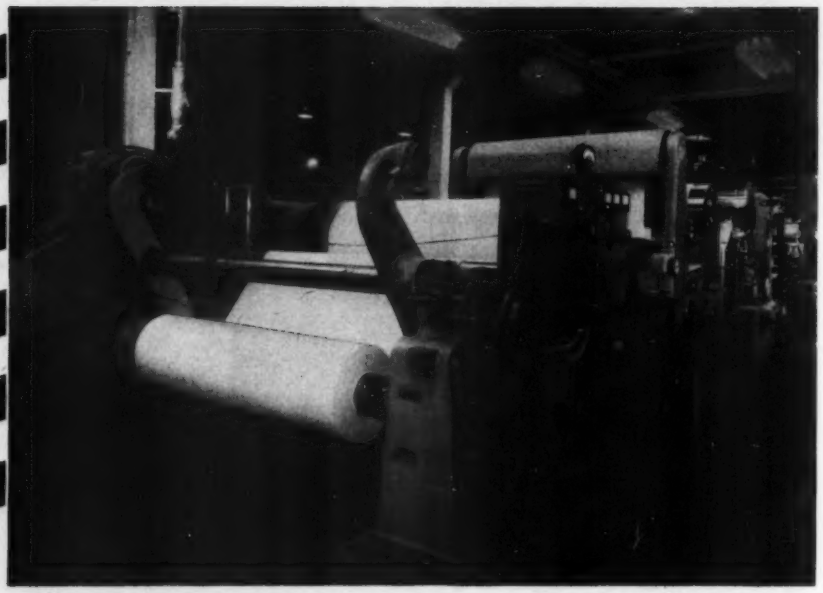
Western Waxed Paper Co.

Hollingsworth & Whitney Co.

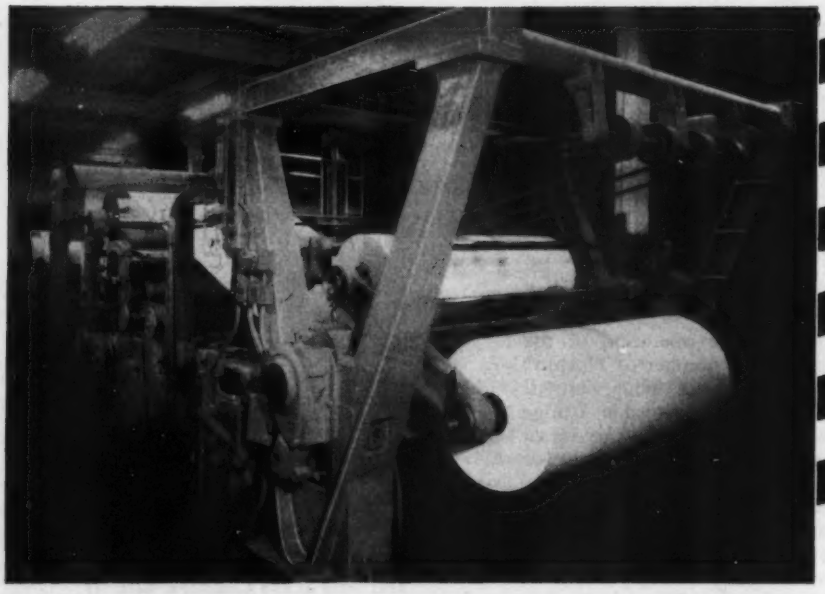
Rhinelander Paper Co.

Individual Drinking Cup Co., Inc.

General Foods Corp.



Quality products are produced on Dilts waxers



Minerva Wax Paper Co.

Zimmer Paper Products, Inc.

Nekoosa-Edwards Paper Co.

Pacific Waxed Paper Co.

Hamilton Manufacturing Co., Inc.

General Waxed Papers, Inc.

KOHLER SYSTEM EQUIPMENT

PRODUCT OF DILTS

Write for our new Waxing Bulletin 9-DM

Dilts MACHINE WORKS, FULTON, N. Y.

SHARTLE BROS. MACHINE CO., Middletown, Ohio • Divisions of THE BLACK-CLAWSON CO., Hamilton, Ohio

Northern Sales Office: 814 N. Superior St., Appleton, Wisc. • Southern Sales Office: 937 Coventry Road, Decatur, Georgia

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paper. Air is an insulator and must be ionized to become electrically conductive. Paper is an insulator when dry, but can be made conductive by absorbing moisture, such as by storage in a humid room. The need for further study on the problem of static electricity was emphasized.

The speaker concluded that in spite of the advances made in understanding the problem, many unsolved problems remain. A systematic research into the principles underlying static electricity should uncover a number of facts which might have considerable economic value to pulp and paper and its allied printing industry. From our present knowledge no set rules for elements of static electricity can be given. Each problem must be analyzed and studied as a separate problem.

Folding Box Conference Planned by Lake Erie TAPPI

TAPPI's Lake Erie Section and the technical committee of the Folding Box Association of America will jointly sponsor a conference at the Carter Hotel in Cleveland May 22-23. A feature of the meeting will be visits to the folding box plants in the Cleveland area, including a tour of the Ohio Boxboard Co. at Rittman. In addition, there will be an exhibit of machines used for quality and routine control tests.

The technical program will include papers dealing with the following subjects: folding boxboard manufacture, folding box manufacture, customer specifications for folding boxes, folding box use, establishment of a folding box quality control program, using a quality control program, establishment of a cooperative effort toward technilogical improvements in the folding box industry, and other needs of the industry.

American Forestry Association Elects 1952 Officers

Don P. Johnston of Wake Forest, N.C., has been elected president of the American Forestry Association, Washington, D.C. He succeeds D. C. Everest, chairman of the board of Marathon Corp., not a candidate for reelection, who becomes a member of the board of directors.

Mr. Johnston has been active in forestry work for many years. He was at one time with the U.S. Forest Service, retiring in 1919. He served as president of the North Carolina Forestry Association from 1948 through 1951 and has been a member of AFA's board of directors since 1947. He becomes the 23rd president of the 77-year-old organization. Reelected treasurer was John M. Christie of Washington, D.C.

Seven new directors in addition to Mr. Everest were chosen to complete the 16-man board. They include: Bryce C. Browning, New Philadelphia, Ohio, secretary-treasurer of the Muskingum Watershed Conservancy District; Erle Cocke, Atlanta, Ga., president of the Fulton National Bank; Dr. Wilson Compton, Washington, D.C., Department of State; Miss Marie E. Gaudette, nature advisor to the program department, Girl Scouts of the United States of America; Dr. Elmer G. Peterson, Logan, Utah, managing director of the Utah Research and Development Foundation; Robert W. Sawyer, Bend, Ore., editor of the *Bend Bulletin*, and Herbert W. Vorhees of Trenton, N.J., president of the New Jersey Farm Bureau.

New York-Canadian Supts. Announce Officer Changes

C. E. Reynolds of Armstrong Cork Co., Fulton, N.Y., has been elected chairman of the New York-Canadian Division of the Superintendents Association to fill the unexpired term of Chauncey E. Cole, resigned.

Since his election, Mr. Reynolds has announced the appointment of Gus Holm of Derrico-Canastota Co., New York, N.Y., as secretary to succeed R. S. Green of H. Waterbury & Sons Co. He continued the appointment made by Mr. Cole of Frank McBrearity of the Manhattan Rubber Division of Raybestos-Manhattan Inc. as the industrial affiliate representative.

S. California Club Elects

G. D. Megel of Silklin Paper Corp. was elected president of the Paper Mill Men's Club of Southern California at a meeting of the group in January at Los Angeles. Chosen to serve with Mr. Megel were C. J. Warren, Paper Container Mfg. Co., vice president; J. C. Fischer, Sherman Paper Products Corp., secretary, and B. E. Calhoon, Marathon Corp., treasurer. The retiring president is Roland Wolf of Sherman Paper Products Corp.

Aniline Printing Process was discussed at the March 21 meeting of the Lake Erie Section of TAPPI in Cleveland. The speaker was Douglas E. Tuttle, International Printing Ink Division of Interchemical Corp.

Lake States TAPPI Hears Talk on Paper Machines

About 160 persons heard a discussion of "Some Interesting Paper Machinery Developments" at the January 8 meeting of the Lake States Section of TAPPI, which was held at the Conway Hotel in Appleton, Wis. Principal speaker was Carl Swartz, sales engineer for Beloit Iron Works, Beloit.

Experimental work with small flow boxes that were foreshortened in width only was described by Mr. Swartz in his opening remarks. He showed with the help of sketches the development of a versatile closed flow box that could be operated either under pressure or vacuum to meet various operating conditions. Stock from the screens enters the box either (a) through a collector box and through a series of valves or (b) through a cross-flow distributor in which the stock enters from each side through two sections divided by a mid-feather. One of the important features is the control of level at a predetermined point by the use of a small hole in the side wall of the box at a predetermined level. Air is delivered to the closed chamber above the liquid, and control depends on the bleed-off of air or liquid at this hole as the hole is automatically sealed or partially sealed with stock. Simply stated, control is based on the principal that more air than water will pass through this hole.

After the operating level in the box had been established, experiments with baffles or other devices showed that driven rectifier rolls were the most desirable in providing the proper flow and in minimizing turbulence. The speed and direction of the rotation of these rolls are important, but once the operating conditions are set they require little change. One roll may be near the entrance to the box, a pair of rolls in the center with the top of the upper roll at about the liquid level, and another pair at the slice. For low machine speeds it may be desirable to use vacuum rather than pressure in the box.

Press Sections

Mr. Swartz described the vacuum pick-up section to carry lightweight sheets from the wire to the first wet press. After passing the suction couch roll, the sheet is picked up by a felt, which is backed up by an adjustable vacuum contact roll. This permits higher speeds where wet web breakage is now a limiting factor. While showers are used on an ordinary pick-up felt, with the vacuum felt arrangement the felt is dry, and moisture is not needed for adhesion. This permits easier drying and higher production.

Drives

The Beloit differential gear box type drive was explained with blackboard sketches. The power from the main line shaft is applied to the shafts equivalent to those of the two axles, with a variable speed changer such as the Link-Belt

P.I.V. unit inserted between one shaft and the main line. The torque emerges at the third member or propeller shaft for drive purposes. The small adjustable differential factor permits minutely accurate and positive draw adjustments for each section. Total sheet shrinkage with an old type drive, which in one case was about 8 per cent, was reduced to 5½ per cent with the new drive, due to precise draw control.

Accompanying Mr. Swartz was E. S. Skinner, assistant chief engineer for Beloit. The meeting was called to order by Chairman A. P. Adrian.

NFPA Names Committee

To cooperate with the government in flexible barrier specifications, the National Flexible Packaging Association has appointed a technical committee on specification packaging. Ex-officio members are Carl Huflage, Midwest Foil Co., Louisville, and Clinton K. Royce, Vanant Products, Milwaukee.

Other committee members include Marvin T. Atlas, Atlas Package and Container Corp.; Corder T. Brown, Rap-In-Wax Paper Co.; Oscar W. Fisher, Kennedy Car Liner & Bag Co., Inc.; John M. Fultz, Reynolds Metals Co.; T. A. Lancaster, Plastic Film Corp.; K. E. Prindle, Dobeckmun Co.; Nata Scher, Melrose Packaging; R. K. Stone, Kellogg Container Division, U.S. Ennvelope Co., and Philip C. Whiting Jr., Marvellum Corp.

National Packaging Exposition

The 21st annual National Packaging Exposition of the American Management Association was staged April 1-4 at Atlantic City. An attendance of more than 17,000 was expected. Over 300 exhibitors utilized 100,000 square feet of floor space to display the most recent developments in packaging, packing and shipping machinery, equipment and services.

General topics to be discussed at the convention were the following: improved production methods, merchandising aspects of packaging, reducing packaging costs, the General Motors packaging program, broadening uses of multiwall paper shipping sacks, and cost data and package handling practices.

Canadian Packaging Assoc. Elects 1952 Officers

Officers and members of the executive committee for 1952 were announced recently by the Packaging Association of Canada.

Elected president was John P. Gledhill, vice president in charge of sales for Aluminum Rolling Mills Ltd., Montreal. Chosen as vice presidents of the Association were F. C. Lennox of Somerville Ltd., London, Ont., and H. Romani, of Christie, Brown & Co. Ltd., Toronto.

Members of the executive committee are C. C. Callowhill of American Can Co., and H. H. McArthur, Hinde & Dauch Paper Co. of Canada Ltd. Mr. McArthur is founding chairman of the Association.

40 Speakers Scheduled for FPRS Convention

The names of two prominent Americans, one in the field of industry, the other in national and international conservation of forest resources, have been announced to head the list of some 40 speakers scheduled for the sixth annual national meeting of the Forest Products Research Society. The site of the meeting is to be the Schroeder Hotel, Milwaukee, June 23-25.

William J. Grede of Milwaukee, president of the National Association of Manufacturers, will address the regular business meeting luncheon. Keynote speaker at the technical session is to be Lyle F. Watts, chief of the U.S. Forest Service, who will speak on the topic, "Research—the Keystone of Forest Products Management."

The convention program will cover millwork, housing, furniture manufacturing and finishing, plywood, veneer, wood fiber board, chemical utilization, lumber handling, barking equipment, and related forestry subjects. Tours scheduled include visits to Allis-Chalmers Mfg. Co., Harnischfeger Mfg. Corp., Filer & Stowell, sawmill equipment manufacturer, Delta Power Tool Division of Rockwell Mfg. Co., and the Forest Products Laboratory in Madison.

Industrial Affiliate Representatives of the Southern and Southeastern Divisions of the Superintendents Association were recently appointed. George Hardaker, sales representative of Lockport Felt Co., was named by the southeastern group. Mr. Hardaker resides in Asheville, N.C. George Witham of Mobile, Ala., sales representative for Orr Felt & Blanket Co., was named by the Southern Division.

Lake Erie TAPPI discussed aluminum foil in protective packaging at its January 18 meeting. Featured speaker was Dr. Thomas M. Hill, technical adviser for Aluminum Co. of America, Pittsburgh. Among subjects discussed by Dr. Hill were to be food packaging and government specifications. The meeting was held at the Hickory Grill, Cleveland.

Material Handling Institute, Inc., has elected L. West Shea of Union Metal Mfg. Co., Canton, Ohio, president for 1952. Chosen with Mr. Shea to the posts of first and second vice president, respectively, were John C. Mevius of American Engineering Co., Philadelphia, and H. M. Palmer of Lewis-Shepard Products, Inc., Watertown, Mass.

Pacific Section TAPPI discussed process control at its January 15 meeting in Olympia, Wash. Among the speakers were James K. Gould, Longview Fibre Co.; Charles H. Carter, Puget Sound Pulp & Timber Co.; Russell Irwin, Minneapolis Honeywell Regulator Co., and Dr. J. H. Rediske, General Electric Co. The moderator was Virgil Sutherling, Longview Fibre.

Annual Shibley Award Meeting of Pacific TAPPI was to be held March 21 at Camas, Wash., with R. I. Thieme of the Soundview Division of Scott Paper Co. serving as chairman. Among the scheduled speakers were Wesley L. Pearl, Longview Fibre Co.; R. G. Stewart, Crown Zellerbach Corp.; W. J. Hall, Weyerhaeuser Timber Co.; Alan S. Rosenfeld, Crown Zellerbach Corp.; LeRoy E. Smith, Rayonier Inc., and S. Gordon Craig, Simpson Logging Co.

Beta-gauge Control of Basis Weight was the topic of an address to be presented at the March 11 meeting of Lake States TAPPI, to be held at Appleton, Wis. Speaker for the meeting was J. A. Van den Akker, research associate with the Institute of Paper Chemistry.

SAPI National Committee chairmen have been announced by William J. Tilden, president. In charge of membership is Edward Rolain of Mosinee Paper Mills Co., Chicago; placement, Joseph A. Cobey, Howard Paper Mills, Inc., New York, N.Y.; annual luncheon, J. William Morgan, St. Regis Paper Co., New York.

Southern and Southeastern Superintendents will meet in joint session for their annual fall meeting. The dates set for the gathering are October 8-10 at the Hotel Roanoke, Roanoke, Va.

Pennsylvania-New Jersey-Delaware division of the Superintendents Association will highlight its May 9-10 meeting with a visit to Schmidt & Ault Paper Co., York, Pa. Another feature of the two-day gathering, to be held at the Hotel Yorktowne in York, will be a panel discussion on paper and paper machine problems as they relate to various grades of paper.

Arkansas Woods Products Assoc., representing the pulp and paper industry in the state, has elected E. N. Beisel of Helena as its 1952 president. Horace Cabe was chosen vice president, and Osro Cobb was reelected executive secretary. Mr. Beisel is president of Beisel

Veneer Hoop Co., a director of the Arkansas Economic Chamber of Commerce and of the Associated Industries of Arkansas.

Coming Events

TAPPI meetings

May 5-8—Third Coating Conference, Sherman Hotel, Chicago.

May 16-17—New England Section (joint meeting with the Connecticut Valley Division, Superintendents Association) Toy Town Tavern, Winchendon, Mass.

May 22-23—Lake Erie Section Folding Box Conference (joint meeting with the technical committee, Folding Box Association of America), Carter Hotel, Cleveland.

June 19-21—Empire State Section (joint meeting with the Niagara Branch of the Technical Section, Canadian Pulp & Paper Association), General Brock Hotel, Niagara Falls, Ont.

American Pulp & Paper Mill Superintendents Association meetings

April 24—Miami Valley Division, Manchester Hotel, Middletown, Ohio.

May 9-10—Northwest Division, Hotel Faust, Rockford, Ill.

May 9-10—Pennsylvania-New Jersey-Delaware Division, Yorktowne Hotel, York, Pa.

May 16-17—Connecticut Valley Division (joint meeting with New England TAPPI), Toy Town Tavern, Winchendon, Mass.

June 6—Miami Valley Division, Orr Felt & Blanket Co., Piqua, Ohio.

June 17-19—National meeting, Sheraton-Cadillac Hotel (formerly the Book-Cadillac Hotel), Detroit, Michigan.

September 18-21—Northeastern Division, Poland Spring House, Poland Spring, Maine.

October 8-10—Southern and Southeastern Divisions (joint meeting) Hotel Roanoke, Roanoke, Va.

Other meetings

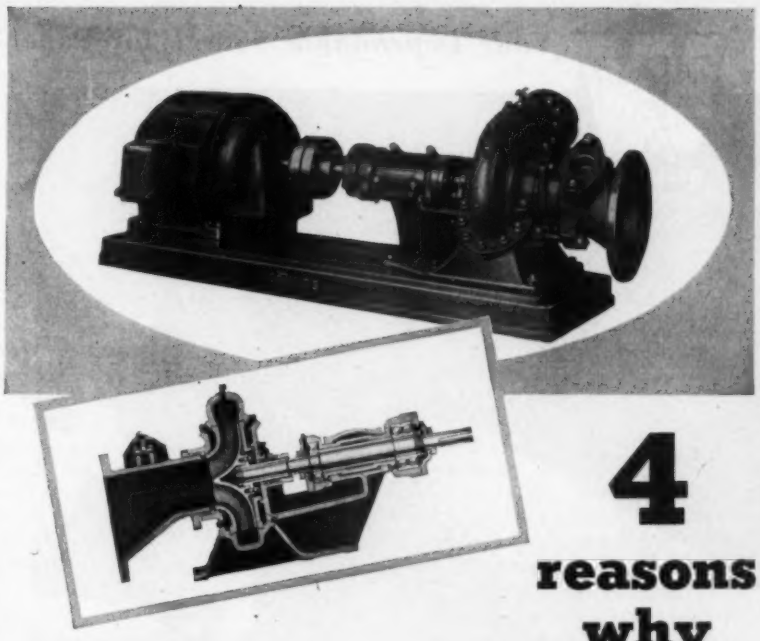
April 29-30—Metal Powder Association show and Eighth Annual Meeting, Drake Hotel, Chicago.

May 11-14—American Institute of Chemical Engineers, French Lick Springs Hotel, French Lick, Ind.

May 15-16—Institute of Paper Chemistry, Sixteenth Annual Executives' Conference, the Institute, Appleton, Wis.

June 18-20—Canadian Pulp & Paper Association, technical section, annual meeting, Murray Bay, Que.

June 23-25—Forest Products Research Society, national meeting, Schroeder Hotel, Milwaukee.



4 reasons why

GOULDS STOCK PUMPS REDUCE STOCK HANDLING HEADACHES

1. ***Positive even flow.*** **The inlet tips of impeller vanes are warped to give a screw conveyor effect which insures an even flow and prevents water separation of the paper stock.**

2. ***No jamming.*** **Ejector vanes follow curvature of main vanes of impeller, preventing entrance and jamming of stock or other solid material between back impeller wall and stationary wearing plate.**

3. ***Easy to adjust for wear.*** **Shaft and impeller can be moved axially toward suction side plate to take up wear due to abrasives in material handled.**

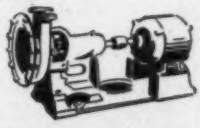
4. ***Easy to inspect and maintain.*** **You can inspect or renew rotating element without disturbing bearing assembly. Ample washout connections at top and bottom of casing. Stuffing box readily accessible and stuffing box gland easily removable.**

Goulds centrifugal stock pumps are especially designed for efficient handling of paper stock of all kinds and consistencies in mills of all types.

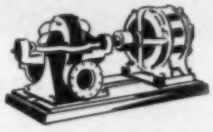
The heavy duty unit (Fig. 3105) illustrated above will deliver up to 4000 G.P.M. Heads up to 220 ft. Available in 4″, 6″, and 8″ sizes. For detailed information, complete specifications, write for Bulletin 723.1.

Other GOULDS PUMPS for Pulp and Paper Mills

This rugged vertical centrifugal stock pump (3115) requires minimum floor space. Available in capacities 150 to 2000 G.P.M. Heads up to 180 ft.



Stainless steel pump for handling acid and alkaline liquors. Capacities up to 600 G.P.M. Heads up to 160 ft. (3705).



For capacities up to 15,000 G.P.M. Heads up to 500 ft. Check the specifications of this Goulds ball bearing double suction centrifugal (3450).

MEMBER

Goulds PUMPS INC. Seneca Falls New York

Your *Dependable* Source for Paper-Making Chemicals

IMPROVED BLEACH ... another case of Wyandotte Chemicals Benefits

The advantages in relying on Wyandotte for paper-making chemicals have been proved in many plants. Take caustic, for instance.

It may be (for you, as it has often been for others) that Wyandotte Liquid Caustic can do three things for your bleach operation:

1 **Reduce handling costs**—for liquid caustic requires less labor in unloading, storage and use.

2 **Speed draining and drying** — and bring incidental economies—since soda bleach foams less than lime bleaches.

3 **Give you cleaner finished paper** — with a minimum reversion of brightness!

Meets All Needs

Our line of caustics — liquid, flake, powder, and Crystal*— fills every paper-making need. You'll find savings in coating, too, by using our precipitated calcium carbonate, PURECAL* M; and find that our soda ash and chlorine meet your highest specifications. Write for complete information. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in Principal Cities.* *TRADEMARK

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Chlorine:

We are currently expanding our production facilities so as to increase the available supply for paper manufacturers.

Purecal* M:

Stabilizes and regulates coating viscosity . . . saves more titanium oxide than any other pigment extender. Other advantages of this precipitated calcium carbonate being proved in paper plants. Ask us.

Soda Ash:

Supply adequate now. Also, we're adding materially to our production facilities. You can rely on our soda ash delivery.

Wyandotte CHEMICALS

For Paper Manufacturers

The Paper Industry Names in the News

Rayonier Announces Two Executive Appointments

Rayonier, Inc., has recently announced the election of *J. T. SHEEHY* as executive vice president and of *A. N. PARRETT* as vice president in charge of research and development.

Mr. Sheehy, a Rayonier vice president since April of 1950, joined a predecessor company in 1933 and has been successively manager of Rayonier's Fernandina Division at Fernandina Beach, Fla., and of the Grays Harbor Division at Hoquiam, Wash.

Dr. Parrett, who has been responsible for the firm's chemical research activities since 1944, joined Rainier Pulp & Paper, a predecessor of Rayonier, in 1932. The research division at Shelton, Wash., which he now heads, employs about 120 people. He had previously been associated in a chemical research capacity with E. I. du Pont de Nemours & Co., Inc., and A. O. Smith Corp., and holds numerous patents relating to wood cellulose manufacture, nitrocellulose, and cellulose acetate.

J. T. Sheehy

A. N. Parrett

Curtenius Heads W. Michigan Curriculum Advisory Committee

FREDERICK B. CURTENIUS, treasurer of Kalamazoo Paper Co., is the new chairman of the advisory committee of the pulp and paper curriculum at Western Michigan College. He succeeds *EARNEST E. LUDWIG*, Bermingham & Prosser Co. vice president, who has served as chairman of the advisory committee since its formation in 1948. Mr. Ludwig has been appointed chairman of the newly formed public relations committee.

DWIGHT STOCKER, president of Michigan Paper Co., was elected vice chairman, and Dr. *A. H. NADELMAN*, head of the curriculum, was reelected secretary. Mr. Stocker and *JOHN C. WOOD*, Kalamazoo Vegetable Parchment Co. vice president, are the two new members of the board.

Other members of the committee are *GEORGE KOHRMAN*, director of vocational education in the industrial arts department, and *GERALD OSBORN*, head of the chemistry department under which the pulp and paper curriculum operates, representatives of the college; *MAXWELL D. BARDEEN*, president, Lee Paper Co.; *O. W. CALLIGHAN*, Edgar Bros. Co., and *FRED C. GOODWILL*, Kalamazoo resident manager for St. Regis Paper Co.

F. B. Curtenius

R. O. Hunt

C-Z Announces Personnel Changes

REED O. HUNT, formerly assistant general manager of manufacturing for Crown-Zellerbach Corp., has been elected vice president in charge of manufacturing. He has been with the company for 24 years and has served as secretary of its postwar planning committee.

The election of *E. W. ERICKSON* and *P. T. SINCLAIR* as assistant vice presidents has also been announced by Crown Zellerbach. Mr. Erickson has been assistant manager of manufacturing for pulp, and Mr. Sinclair was formerly assistant manager of manufacturing for paper.

D. S. CONEY, personnel supervisor at the Crown-Zellerbach West Linn, Ore., mill since 1949, has been appointed resident manager of the new Crown Willamette paper converting division at San Leandro, Calif.

In other personnel changes, the company has announced the transfer of *G. H. GALLAWAY*, resident manager of the Carthage division, to the Camas division as assistant resident manager. *HERBERT H. WYMORE*, resident manager of the Lebanon division, will succeed Mr. Gallaway at Carthage. *BEVERLY C. SMITH*, assistant resident manager, Port Townsend division, has been named resident manager of the Lebanon division to succeed Mr. Wymore.

T. J. WADE, who has been assistant personnel and safety supervisor at the Crown-Zellerbach mill in Port Townsend, Wash., has been transferred to the Port Angeles division, where he will continue to serve in the same capacity.

G. W. E. NICHOLSON, Union Bag and Paper Corp. vice president in charge of manufacturing, has been elected a director of the company.

ROY MONEGHAN, production superintendent, has been appointed division manager of the Flint, Mich., plant of Ottawa River Paper Co.

WILLIAM W. CROSS has been named assistant general sales manager of Kimberly-Clark Corp., Neenah, Wis. He was formerly newsprint sales manager of Coosa River Newsprint Co.

CHARLES M. CARRIER has been elected vice president and manager of manufacture for Great Northern Paper Co. He succeeds C. B. Stanwood, who resigned the post but will continue with the company as director of purchasing. Mr. Carrier has been with Great Northern for 36 years, having joined the company as a chemist.

J. S. SNELHAM has been elected to the newly created position of chairman of the executive committee of Continental Can Co. of Canada, Ltd., board of directors. He had been vice president in charge of finance for the parent company, Continental Can Co., New York, until his retirement on January 1.

KARL A. SWENNING has been promoted to the position of general woods manager of Hollingsworth & Whitney Co., Boston, Mass.

DAVID B. SMITH, president and general manager of Wausau Paper Mills Co., Brokaw, Wis., was elected president of the Wisconsin Paper Group, a non-

profit organization for providing pooled carload delivery services to customers of 35 paper manufacturers and converters.

D. L. MACLAREN, lieutenant governor of New Brunswick, has been named a member of the board of directors of Fraser Companies, Ltd., Edmunston, N.B., to succeed the late John Neill.

REUBEN B. ROBERTSON, president of Champion Paper & Fibre Co., Hamilton, Ohio, was recently elected a director of the Cincinnati & Suburban Bell Telephone Co.

THOMAS LEECH, vice president and sales manager of Whiting-Plover Paper Co., Stevens Point, Wis., was appointed general manager, following the resignation of A. J. Schierl. Mr. Leech has been with the company since 1938. In addition to his new responsibilities, he will continue in the capacity of vice president and sales manager.

Thomas Leech

R. T. Elias

R. T. ELIAS has been appointed associate professor in the pulp and paper technology curriculum at Western Michigan College. He will assist Dr. Alfred H. Nadelman, head of the curriculum. Mr. Elias is a graduate of the Institute of Paper Chemistry and a former employee of Detroit Sulphite Pulp & Paper Co. and Whiting-Plover Paper Co.

EARL W. WALLACE, associated with Gair Co. of Canada Ltd. for many years, has been appointed sales manager for the Montreal corrugated division.

ARTHUR W. TOWNE, since 1934 manager of the San Francisco division, has been elected general manager of Blake, Moffitt & Towne, Seattle.

RICHARD C. RUFFER has been made manager of the Valdosta, Ga., plant of American Cyanamid Co. The plant is a producer of rosin size, gum, and tall oil.

Hollingsworth & Whitney Co. has announced the following staff changes: *L. G. GLAZIER* was elected executive vice president; *W. ELLIOTT PRATT JR.*, vice president and treasurer; *FREDERICK GOODRIDGE*, vice president; *JACK B. COWIE*, vice president in charge of sales, and *CHARLES J.* DYNES, assistant vice president. The resignation of *ROBERT NIVISON* as vice president was accepted with the understanding that he will continue to serve as a consultant.

DAVID LIEBOWITZ, formerly with Interstate Corrugated Box Co., Glendale, L.I., has been named sales manager for Arch-Bilt Corrugated Products Corp., Maspeth, N.Y.

R. CARL CHANDLER, eastern sales manager for the corrugated container division of Union Bag & Paper Corp., has been appointed director of the division.

STANLEY RESOR, president of J. Walter Thompson Co., has been elected a director of Scott Paper Co., Chester, Pa. He replaces Gilbert Kinney, who died March 12.

Stanley Resor

W. P. Drake

WILLIAM P. DRAKE, vice president in charge of sales for Pennsylvania Salt Mfg. Co., Philadelphia, has been named director of the rubber, chemicals, and drugs division of OPS. He will serve until July 1.

Fairbanks-Morse Changes

Fairbanks, Morse & Co., Chicago, recently announced changes in the sales organization. The major new staff appointments are as follows:

J. A. CUNEO, formerly manager of the Chicago branch, has been promoted to the position of general sales manager. *H. L. HILLEARY* continues as assistant sales manager. *MILO C. ROY*, manager of the Omaha, Neb., branch, has been appointed manager in Chicago. He is to be succeeded in Omaha by *J. W. WRIGHT*, formerly manager of the Diesel Sales Div., with headquarters in Chicago.

C. E. DIETLE, formerly diesel department manager of the Chicago branch, has been promoted to the position of manager of the Diesel Sales Div. *W. B. WYLLY*, former manager of the Houston, Texas, sub-branch, has been appointed manager of the Atlanta branch. *L. A. WEOM*, formerly manager of the St. Louis branch, has been transferred to St. Paul, where he will succeed *A. C. THOMPSON* as branch manager. Mr. Thompson recently retired after 45 years of service. *CLIFFORD J. SCHROEER*, formerly diesel department manager at St. Louis, succeeds Mr. Weom.

Autonomous operation for the Electrical and Scale divisions was also announced. *GORDON R. ANDERSON*, manager of the Freeport Works, has been promoted to the position of general manager of the Electrical Div. *GEORGE C. WORTHLEY*, manager of the Scale Div., has been promoted to general manager and *JOE PETERSON* to the position of sales manager.

ROBERT H. ORCHARD, assistant to the president, has been named vice president of Orchard Paper Co., St. Louis, Mo.

FRANK KING, formerly forest ranger in Lowndes County, Ga., has been named to head the equipment and maintenance shops of the Georgia Forestry Department, located at Macon. Succeeding Mr. King is *WALTON W. WRIGHT*, assistant ranger in Lowndes County for the past four years.

HAROLD R. BONNYMAN has been named sales manager of the container department of Bird & Son, East Walpole, Mass. He succeeds L. S. Wright, who resigned to become assistant to the president of Hopper Paper Co., Taylorville, Ill. Moving up to Mr. Bonnyman's former position as assistant sales manager is *BENJAMIN BEALE*, formerly a sales representative.

JAMES A. HOLEKAMP has joined the staff of the American Pulpwood Association as logging engineer. He was formerly woodyard shift foreman at Coosa River Newsprint Co., Coosa Pines, Ala. He was for a time with William Bonifas Lumber Co. in northern Michigan as forester connected with experimental pulpwood logging operations. He is making his headquarters in Sylacauga, Ala.

COLA G. PARKER, president of Kimberly-Clark Corp., Neenah, Wis., presided over the National Industrial Conference board meeting recently in Chicago.

HENRY W. STARK JR., president of Rexford Paper Co., Milwaukee, has been elected president of the Gummed Industries Association.

B. B. SAWTELL, division manager of the creped wadding division of Kimberly-Clark Corp., Neenah, Wis., has been named manager of the firm's new

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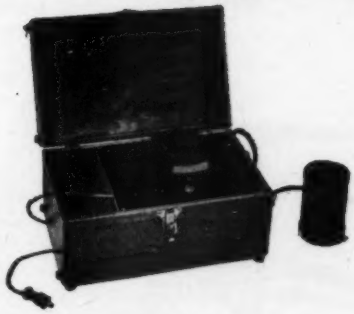

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merchandising division. *ABBOTT BYFIELD*, research manager for the technical division, has been appointed to head the new product development.

RAYMOND H. FINLAY JR. has been made sales representative for Union Bag & Paper Corp. in Missouri, Nebraska, and Iowa. He will supervise sales of Union standard products and flexible packaging.

WHITNEY B. SANDERS of Crown Zellerbach Corp. was installed recently as president of the San Francisco chapter of the Tax Executives Institute.

EDWIN R. BUTLER, for the past two years assistant managing director of American Forest Products Industries, Inc., Washington, D.C., resigned, effective February 1. He was in charge of AFPI's industry division and directed editorial and field coordination.

WILLIAM BOFENKAMP has been appointed sales manager of the St. Paul, Minn., office of National Container Corp. He joined the firm in 1948, when the company with which he was connected, Kraft Containers Inc., was acquired by National Container.

KENNETH HARVEY has been made Ontario sales manager for Lily Cups Ltd., Toronto.

MICHAEL MILTON was recently honored at a testimonial dinner in New York, N. Y., on the occasion of the 35th anniversary of the founding of Milton Paper Co. The paper industry, together with the graphic arts industry, was represented at the gathering.

Alaska Pine & Cellulose Co. has announced five appointments in the Woods Division. Resident manager of Western Forest Industries, subsidiary of APC, is *J. G. STOTHERS; GORDON DODS* is logging superintendent; *WALTER BOWDEN* is chief logging engineer; *T. K. HUDDART* is in charge of logging development, while *GEORGE PERCY* is in charge of log production.

PALMER McCONNELL has been made manager of sales promotion for stock products, Marathon Corp., Menasha, Wis. Mr. McConnell, who has been with Marathon for 24 years, has been in charge of the firm's sales service operations for the last 10 years.

WALTER BUTLER has been named manager of the metropolitan New York division of Hudson Pulp & Paper Corp.

MILTON H. ("MIKE") TIGERMAN has joined Chippewa Paper Products Co., Inc., Chicago, as a vice president. He will be concerned with the firm's sales divisions. Prominent in the paper field for more than 22 years, he was a principal in the formation of Corrugated Containers, Inc., and has also been associated with Container Corp. and Union Bag & Paper.

RALPH BUECHLER has been named sales engineer with headquarters in Wausau, Wis., for D. J. Murray Mfg. Co. A graduate of Purdue, he was for 15 years associated with Black-Clawson Co.

Ralph Buechler

C. Kelley Jr.

CHARLES KELLEY JR. has joined the sales staff of H. Waterbury & Sons Co., Oriskany, N.Y. He will represent the firm in New England, eastern New York, and northern New Jersey. He was formerly assistant sales manager of H. & T. McCluskey & Sons, Inc., New Haven, Conn.

J. THOMAS RESTIN has been recently promoted to salesman by Gardner Board & Carton Co., Middletown and Lockland, Ohio. Before joining Gardner he was with Armstrong Cork Co., Lancaster, Pa.

J. A. BARDSLEY, engineer with Howard Smith Paper Mills Ltd., Montreal, has been named chief engineer to succeed *W. H. WHARTON*, who has retired because of ill health.

H. W. SMITHSON, general manager, has been made vice president and general manager of National Paper Box Ltd., Vancouver, B. C.

J. A. CRAIG, general manager of Sidney Roofing & Paper Co. Ltd., Victoria, B. C., a subsidiary of E. B. Eddy Co., Hull, Que., has been elected a director of the parent firm.

The Association of American Wood Pulp Importers has announced the election of *ALBERT BLATTMANN* as president. *JOHN WESTERGAARD* was named vice president; *HAROLD J. LANNEY*, secretary; *V. RAMSAY*, treasurer, and *STANFORD G. BLANKINSHIP*, director.

HOWARD ANDERSON, nursery manager for Nekoosa-Edwards Paper Co., Port Edwards, Wis., has been elected president of the Wisconsin Nurserymen's Association. Mr. Anderson has held the position of nursery manager at Nepco for the past 10 years and has been associated with the firm since 1929.

LAURENCE S. WRIGHT has been appointed assistant to the president of Hopper Paper Co., Taylorville, Ill. Mr. Wright was previously employed by Bird & Son, Inc., East Walpole, Mass., as advertising and sales manager.

R. L. WELDON, president and managing director of Bathurst Power & Paper Co., Ltd., has been awarded the Julian C. Smith medal "for achievement in the development of Canada." The award was made by the Engineering Institute of Canada. Mr. Weldon has been associated with the pulp and paper industry since 1917 and was president of the Canadian Pulp and Paper Association in 1942.

GEORGE A. FARRAH has been appointed general manager of the Tomahawk, Wis., box plant of National Container Corp. He will also supervise the Milwaukee and Twin Cities sales area as part of his new assignment.

Neenah Paper Co., Neenah, Wis., has announced that at the annual stockholders meeting the following officers and directors were elected: *JOHN R. KIMBERLY*, chairman; *D. K. BROWN*, president; *LEO O. SCHUBART*, executive vice president and secretary, and *DONALD H. SEVERSON*, treasurer. *FRED O. LEECH*, assistant sales manager, and *DR. ALAN ADRIAN*, director of research, were elected to the board of directors. Other members of the board are *I. J. STAFFORD*, director of operations, *DAN A. HARDT*, sales manager, and *KIMBERLY STUART*.

Watervliet Paper Co., Watervliet, Mich., has announced that all directors and officers of the firm were reelected at a recent meeting. The officers include *GEORGE K. FERGUSON*, president; *CHARLES B. HAYES*, vice president; *WILBUR C. HUNTING*, secretary, and *SEVERENS BALCH*, treasurer.

Directors of Kalamazoo Paper Co. recently reelected at the annual meeting include *A. E. CURTENIUS, GEORGE T. JUBB, BERT H. COOPER, JAMES A. WISE, F. B. CURTENIUS, CHARLES S. CAMPBELL, EDWARD M. HINDERT, C. HUBBARD KLEINSTUCK, WOODBURY RANSON, SHERWOOD WALDRON*, and *W. K. WALLACE*. Officers are Mr. Jubb, president; Mr. Wise, vice president for production; Mr. Cooper, vice president

and purchasing director, and F. B. Curtenius, secretary-treasurer.

Allied Paper Mills, Kalamazoo, Mich., reelected all officers and directors at the recent annual meeting. Officers and directors are *DWIGHT R. CURTENIUS*, president; *FREDERICK C. FISCHER*, vice president and secretary-treasurer; and *MISS BLANCHE HULL, ALFRED B. CONNABLE, JR., GEORGE E. MONROE, E. G. READ JR.*, and *PAUL H. TODD*, directors. *C. B. CROSSLEY* is assistant secretary.

CORT MAJORS, general sales manager of Fibreboard Products Inc., has been elected a vice president of the corporation. He has been associated with Fibreboard and one of its predecessor companies for more than 30 years.

ROY F. BRISBOIS has been appointed process pump specialist for the Peerless Pump Div. of Food Machinery & Chemical Corp. He will devote his time to pump application problems in refineries, chemical process and industrial plants, coordinating his efforts with field engineers and distributors.

R. F. Brisbois

J. B. Hoxie

JAMES B. HOXIE has been appointed western division sales manager for Oliver United Filters Inc. His headquarters are to be in Oakland, Cal., with a territory covering all Pacific Coast and Mountain states. Mr. Hoxie, who has been with the firm 20 years, succeeds Philip J. McGuire, who has been made director of research and development.

SID LAWRENCE has been elected president of Local 153, International Brotherhood of Pulp, Sulphite, and Paper Mill Workers, Longview, Wash. Other officers are *HUGH CANNIN*, vice president; *JACK REARDON*, corresponding secretary; *LEON MILLER*, treasurer; *NICK VANDERBROCK*, financial secretary, and *BILL LEHMAN*, trustee.

GEORGE J. MULLER, executive vice president and member of the board of directors, has been elected president of Morningstar, Nicol, Inc., Chicago. He succeeds Joseph Morningstar, retiring, who now becomes chairman of the board of directors. Mr. Muller began his career with the firm in 1918 and has charge of the production and import business.

E. ROSS GRIGG has been appointed purchasing agent for Brown Boveri (Canada) Ltd., with offices at St. Johns, Que. Mr. Grigg was formerly purchasing agent for Leland Electric of Guelph, Ont.

J. D. MAGUIRE has been made assistant treasurer of Dominion Hoist & Shovel Co., Montreal. He was formerly with Dominion Engineering Co. of Lachine, Que. *G. D. LEWIS* is to be assistant secretary for both companies.

J. A. FULLER has been appointed to the position of district sales manager for the Vancouver office of John Inglis Co. Ltd. He will be in charge of the British Columbia territory.

G. B. DAVIS has been elected vice president in charge of sales for Baker-Raulang Co. He replaces John R. Morrill, who recently resigned. A veteran of 17 years with the firm, he was made sales manager in 1948.

G. B. Davis

Jackson Kemper

JACKSON KEMPER has been appointed general manager of sales in the Distributor Products Div. of Watson-Stillman Co. He was formerly assistant to the late A. G. York, vice president.

W. W. KOVALICK has been promoted from chief engineer to production manager of the Chicago plant of the Ingersoll Products Div. of Borg-Warner Corp. *H. T. BURKE*, formerly chief tool engineer, becomes acting chief engineer.

ROBERT L. CUNNINGHAM, chief estimator in the printing division at Rochester, N. Y., has been made manager of the Cincinnati branch printing plant of Todd Co.

DR. VLON N. MORRIS has been appointed director of research for Shellmar Products Corp., Mount Vernon, Ohio.

ROBERT A. WEISSE has been made assistant sales manager of Kaydon Engineering Corp., Muskegon, Mich. He was at one time a process engineer for A. O. Smith Corp., Milwaukee.

DAN B. CHAPMAN of Appleton, Wis., has been made Midwest sales representative for Morden Machines Co., Portland, Ore.

J. ALBERT WOODS, president and a director of Commercial Solvents Corp., has been elected a director of Corn Products Refining Co., New York, N. Y.

C. J. O'NEIL has been promoted to the newly created post of merchandise manager for the Johns-Manville Celite (diatomaceous silica) Division. Since 1942 he has been staff manager for Celite fillers.

WALLACE MANN, former owner of the Ravenna Box Factory, Ravenna, O., has been appointed service director of that city.

RALPH E. DeSIMONE, vice president and general manager, has been elected president of Merritt-Chapman & Scott Corp. to succeed Raymond F. Kopp, who resigned recently. As executive vice president and general manager, Mr. DeSimone has been in charge of the firm's operations in the fields of industrial building, marine and heavy construction, marine salvage, and derrick heavy hoisting. He has been a member of the organization since 1916. Designated by the board of directors to serve as acting treasurer was *MARSHAL A. STAUB*, a member of the M-C&S accounting department for the past eight years.

E. FRANK MILLER has been made manager of the eastern division for Hills-McCanna Co., Chicago. He was formerly associated with General Power Plant Corp. of New York.

JAMES H. INGERSOLL, vice president, is now in charge of all contract and defense sales for the Ingersoll Products Div. of Borg-Warner Corp. New manager of defense sales is *A. J. ROBERTSON*, while *L. R. MILLER* is the new manager of contract sales.

JOHN W. MEADER, economist for Great Lakes Carbon Corp., has been elected assistant vice president.

J. HENRY ANTHONY, manager of the Industrial Engineering Div., has been appointed plant superintendent for Whitney Chain Co. He has been with the firm in various factory production capacities for the past 12 years.

FRED H. ROTH has retired as vice president of the Clopay Corp., but is to continue as a board member. Succeeding

Mr. Roth is *STEPHEN HARRINGTON*, formerly associated with Arthur Young & Co. and Sharples Corp. Clopay also announced election of *JOHN S. STARK* to the office of executive vice president and *FRANK A. MILLER* to the vice presidency.

CARSON L. RUYLE has been appointed advertising manager of Gardner-Denver Co., Quincy, Ill. He joined the firm in 1930 and since 1941 has been a member of the sales division.

JOSEPH M. CUNNINGHAM has been appointed manager of operations in British Columbia for B. C. Bridge and Dredging Co. He will take charge of the construction of the new newsprint mill for Elk Falls Co. Ltd. at Duncan Bay and the modernization program of Howe Sound Pulp Co. at Port Mellon.

RALPH C. KEAST has been appointed vice president in charge of engineering for Hayes Mfg. Co., Vancouver, B.C.

WILLIAM J. BRINKWORTH has been made distributor sales representative in the Southwest for Link-Belt Co., Chicago. His headquarters are in Houston, Texas.

S. VERNON TRAVIS has been appointed manager of the newly established sales standards section of General Electric Co's. Apparatus Sales Division at Schenectady.

ROBERT E. COOK, field engineer with Timken Roller Bearing Co's. Cleveland office, has been named to the position of sales engineer with the Steel and Tube Division's Cleveland headquarters.

H. A. BENDIXEN has been named vice president and general sales manager of the Corn Processing Division of Clinton Foods Inc. He has been general sales manager.

G. V. MIGULA has joined Hewitt-Robins Inc. as manager of the western sales division at San Francisco. He replaces *J. H. HAYDEN*, who is retiring but will continue to serve in an advisory capacity.

FRED P. BIGGS has been elected a vice president of American Brake Shoe Co. Mr. Biggs, who is also president of the firm's Brake Shoe and Casting Div., has served in several sales capacities since joining the firm in 1916.

HAROLD H. HEINCKE has been named assistant manager of the commercial research department, general machinery division, at Allis-Chalmers Mfg. Co., Milwaukee.

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The Paper Industry Necrology

Albert C. Gilbert

Associated with the paper industry for nearly 50 years, *Albert C. Gilbert* died at his home in Neenah, Wis., March 14. He was former president and chairman of the board of Gilbert Paper Co.

He joined the firm in 1907 and served as treasurer and a director of the company until 1923, when he was named vice president. He became president of Gilbert in 1926, a position that he held until 1951. In that year he became chairman of the board.

A. C. Gilbert

Mr. Gilbert was also president of the Writing Paper Manufacturers' Association in 1939, 1940, and 1941. He served as chairman of the paper and pulp industry's role in the observance of the Wisconsin State Centennial in 1948.

Philip Housen

Philip Housen, 47, vice president of Erving Paper Mills in Erving, Mass., died in Orange, Mass., March 10. He had been with the firm for the past 10 years.

Mr. Housen was associated with American Writing Paper Corp. in Holyoke for several years after completing his education at Northeastern University. Other firms by whom he was employed include Eastern Wine & Spirits Co., McKesson & Robbins, Inc., and Atlas Distributing Corp.

Bourdon W. Scribner

Responsible for the development of many new kinds of paper for the government, *Bourdon W. Scribner,* 67, paper technologist for the Bureau of Standards, died March 6 in Washington, D.C.

Since joining the Bureau 19 years ago, Mr. Scribner had been head of the paper section in the Division of Organic and Fibrous Materials. He had previously been associated with West Virginia Pulp & Paper Co. in Luke, Md.

Mr. Scribner was responsible for changes in the fiber content and manufacturing techniques in the government's currency paper during the late 1920s. He also developed a paper made of glass fiber, which is an effective filter in gas masks and respirators and in World War II developed a map paper that stood up well under all battle conditions.

A graduate of Pennsylvania State College, Mr. Scribner was a member of the American Chemical Society and TAPPI. He received the TAPPI gold medal in 1945 for his contributions to the industry.

Harriett M. Weston

Known by many in the paper industry, *Harriett M. Weston* died at her Lombard, Ill., home April 3. A graduate of Syracuse University, she was the wife of Harry E. Weston, former editorial director of THE PAPER INDUSTRY and now secretary-treasurer of the American Pulp and Paper Mill Superintendents Association. Mrs. Weston was born in Griegsville, N.Y. Funeral services were at the First Methodist Church in Lombard April 7.

Henry S. Dennison

Henry S. Dennison, 74, president of Dennison Mfg. Co., Framingham, Mass., died February 29. Aside from his activities in the paper products field, he had served the government in many posts since World War I. Mr. Dennison was chairman and a director of the Federal Reserve Bank of Boston from 1937 to 1945. With others, he wrote several books on business policies, organization, and employee relations.

Norman J. Cowie

Norman J. Cowie, vice president of Hurlbut Paper Co., South Lee, Mass., died February 28. A native of Scotland, he was first associated with Hawthorne Paper Co., Kalamazoo, Mich., where he was employed 23 years as a purchasing agent. He joined the staff at Hurlbut eight years ago.

W. Hathaway Simmons, formerly general manager of Bemis Bros. Bag Co., Indianapolis, died February 3 at Fort Myers, Fla.

James J. Ryan, a papermaker for 53 years, died January 18 at his home in Fitchburg, Mass. He was a former superintendent for Crocker Burbank Co. and for many other New England mills.

William F. Bromley

Associated with the paper industry for most of his life, *William F. Bromley,* 72, retired secretary and former vice president of Hammermill Paper Co., Erie, Pa., died February 19. He retired January 1, 1945, after 31 years' service with the firm.

Mr. Bromley had formerly been on the staff of Nashua River Paper Corp. of East Pepperville, Mass. He joined Hammermill in 1914 as assistant sales manager. In 1919 he was named assistant treasurer and in the following year became treasurer and assistant secretary. From 1929 to 1939 he was vice president and secretary.

Fred W. Roberts, 76, president and founder of F. W. Roberts Mfg. Co., Inc., of Lockport, N.Y., and chairman of the board of F. W. Roberts Mfg. Co. Ltd. of Niagara Falls, Ont., died at his home February 18.

Sam Fredman, 69, president of Fredman Bag Co., Milwaukee, died March 11.

Thomas D. Brown, retired engineer for the Haverhill Boxboards Division of Robert Gair Co., Inc., Haverhill, Mass., died February 21. He had been with the firm 34 years.

Edward Hilfrank, former master mechanic and chief engineer for Fort Orange Paper Co., died February 18 at a nursing home near Poughkeepsie, N.Y.

Dr. Fred Finley Fitzgerald, 69, director of research for American Can Co. from 1935 until his retirement in 1942, died February 7 at Joliet, Ill.

Paul E. Bourdeaux, 56, retired treating engineer for the National Pole and Treating Division of Minnesota & Ontario Paper Co., died February 15.

William J. Bigley, one of the oldest industrial paper salesmen in the country, died February 11 while vacationing at St. Petersburg, Fla. He began his selling career in 1887. Mr. Bigley was for 25 years connected with Whitney Bros. Co., Boston.

Patrick J. Callahan, until his retirement four years ago an engineer for American Writing Paper Corp., Holyoke, Mass., died February 23.

Frank C. Baker, an executive of Southwest Box Co., died January 8 at Sand Springs, Okla.

Cortland A. Mehl, 36, a New York district salesman for American Cyan-

amid Co.'s industrial chemicals division, died January 23 in a Watertown, N. Y. hospital. He joined Cyanamid in 1935 as an office boy. In 1947, after numerous promotions, he was made a salesman.

Pacy Bolten, until his retirement seven years ago operator of Bolten Box Co., Dallas, Texas, died January 16 in Washington, D. C.

S. Craig Walker, president of Walker Bag Co., Louisville, Ky., died January 20. He had headed the firm since 1941, when he succeeded his father, the late John S. Walker.

John A. Williams, 52, superintendent of Delmar Paper Box Co., Cincinnati, died January 24 at his home in Newport, Ky.

Herbert A. Strom, 68, chief designing engineer for Weinman Pump Mfg. Co., Columbus, Ohio, died January 20. He had been associated with the firm since 1935.

Edwin F. Lankes, eastern region supervisor for Detrex Corp., died January 22.

Theodore H. Lipton, 42, in charge of paper coating operations for Haloid Co., Rochester, N. Y., died February 3 after a long illness.

Henry J. Considine, 51, office manager for A. Hartung & Co., Philadelphia wholesale paper distributors, died February 8.

Albert F. Ratz, New York office manager for Celanese Corp. of America, died February 4. He was 58.

Hector R. Cooke, foreman of the stereotype department of Nashua Gummed & Coated Paper Co., Nashua, N. H., died January 31.

E. J. Kiefer, 47, of New York, N. Y., since 1937 district sales manager for Sigmund Ullman Co., a division of Sun Chemical Corp., died February 3.

Ernest H. Chapin, 53, manager of industrial sales in New York for Foster Wheeler Corp., where he specialized in the development of new products, died recently at his home.

Edward V. Patrician Jr., 58, manager of the Ft. Niagara Corrugated Box Division of Robert Gair Co., Inc., North Tonawanda, N.Y., died March 1.

Spencer Owens Shotter, 59, secretary-treasurer of Mid-Hudson Container Co., Poughkeepsie, N.Y., died March 18 at his home.

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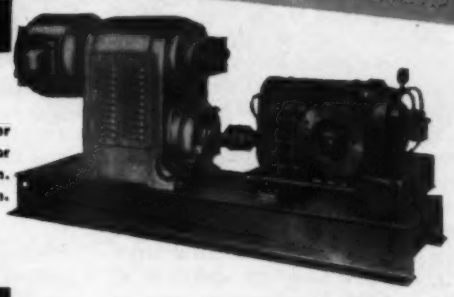
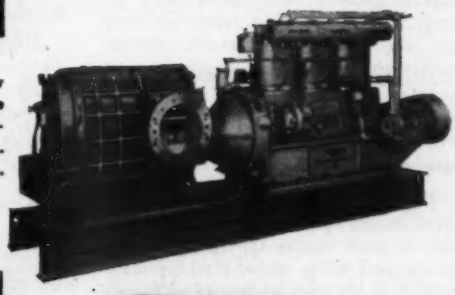


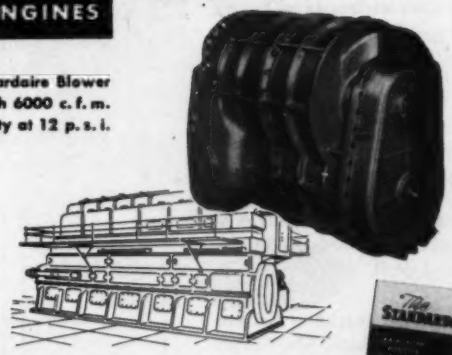
Standardaire Blower with Varidrive Motor to deliver 780 c. f. m. at 1750 r. p. m.

for SEWAGE PLANTS

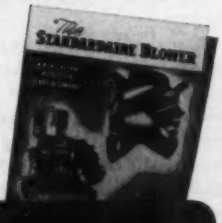


Standardaire Blower with Climax Engine using sewage gas—to deliver 2100 c. f. m. at 720 r. p. m.

for DIESEL ENGINES



Standardaire Blower with 6000 c. f. m. capacity at 12 p. s. i.



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The Paper Industry Safety News

Salesmanship in Safety Stressed at Sault Ste. Marie Meeting

Sufficient manpower to operate a 500-man pulp and paper mill for at least two weeks has been conserved over the past three years through the efforts of the Northwestern Branch of the Ontario Pulp and Paper Makers' Safety Association. This opinion was expressed March 5 by Fred O. Soughton, general chairman of the Branch, in an address before the 15th annual convention of the Ontario and Manitoba Council of Pulp and Paper Mill Unions, which was staged at Sault Ste. Marie, Ont. Mr. Soughton is safety supervisor for LongLac Pulp & Paper Co. at Terrace Bay.

Projecting the record of his branch in terms of figures characteristic prior to 1948, the speaker declared: "If our collective accident experience had not shown improvement during the past three years, we would have had an additional 680 lost-time injuries involving an extra time loss of 5,445 work days, or almost 44,000 man-hours, enough manpower to run a 500-man mill for at least two full weeks."

Stressing the paramount need for a plan of action in any successful safety program, Mr. Soughton said that all those concerned with safety must be firmly convinced in their minds that they can and will achieve results. Almost equally important is a willingness to put the plan to work, "sparing no horses" in the process.

Salesmanship Counts

"In our plans we must include 'selling top management,'" the speaker continued. "I don't believe that any mill can have a good safety record if its top management is not completely sold on having a good record . . . I am completely convinced in my own mind that any mill manager can have a most favorable accident experience in his plant if he insists upon it in the same manner that he uses to get quality and production results, and that is simply by letting his line organization know what is expected of them. At the same time, I am convinced that top management wants to do the right thing and will, if properly informed."

Not confining his remarks to management's responsibility alone, Mr. Soughton said that plans that deal effectively with the various "human" failures must also call for influencing the minds of members of the working force, which includes *everyone* on the payroll. All too little attention is paid to creating a "safety consciousness;" too much is focused on mechanical hazards, which now constitute only a small percentage of the whole. "If 85 to 90 per cent of all industrial injuries are directly connected with 'human' failures," he declared, "I contend that 85 to 90 per cent of our effort . . . should be beamed in that direction."

Record of Improvement

Reviewing briefly the history of the Northwestern Branch of the safety association, Mr. Soughton detailed some of the steps taken in recent years to establish the current successful program. It was in the late fall of 1948 that member mills of the Association in northwestern Ontario met at Marathon to discuss in a general way mutual accident prevention programs. Almost a year elapsed before a second meeting was held, in September 1949 at Dryden, where general plans were formulated that resulted in a formal organization being constituted at Fort William the following February.

Since the Marathon meeting, the record of the 11 member mills of the Northwestern Branch has been one of constant improvement: (1) lost-time injuries have dropped from 447 in 1948 to 199 in 1951, an improvement of 55.48 per cent; (2) the frequency rate has dropped from 31.2 in 1948 to 13.9 in 1951, an improvement of 55.44 per cent; (3) actual work-days lost due to on-the-job accidents have dropped from 6,467 in 1948 to 4,636 in 1951, a 28.31 per cent improvement, and (4) limited severity, which was .320 in 1948, was reduced to .223 in 1951, an improvement of 30.31 per cent.

All Accidents Important

To appreciate the true picture of an individual mill's accident picture, it is important that consideration be given accidents of all kinds, not merely those involving lost-time injuries and fatalities. Mr. Soughton listed those not usually considered as being (1) those causing personal injury necessitating medical attention or first-aid but no lost time, and (2) accidents in which no personal injuries are suffered, i.e., accidental damage to equipment or tools, or the simple unplanned act of a hammer being dropped to the floor, which is only time-consuming.

According to the Heinrich formula, which is widely accepted throughout the industry as the best ratio of accident types devised to date, the figures 1, 29, and 300 are used. Simply stated, the formula means that for each lost-time injury there are 29 minor injuries and 300 accidents involving no personal injury.

Using this formula, Mr. Soughton explained, the 1,108 disabling injuries that the 11 mills comprising the Northwest Branch experienced during the past four years indicate that there were probably more than 32,000 minor injuries and in excess of 330,000 other accidents where no injury was involved, but where an accident occurred in the same way and from the same causes as in the case of

Year	Lost Time Injuries	Frequency Rate	Days Lost		Limited Severity	Total Exposure Man Hours
			Actual	Contest		
1948	447	31.2	6467.5	4581	.320	14,285,108
1949	259	19.2	4997.5	3444	.255	13,463,912
1950	203	15.0	4323	2820.5	.208	13,504,355
1951	199	13.9	4636.5	3186.5	.223	14,276,817
TOTALS	1108	19.9	20424.5	14032	.252	55,530,192

ACCIDENT EXPERIENCE summary for members of the Northwest Branch of the Ontario Pulp and Paper Makers' Safety Association for the period 1948-51

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minor or major injury. Accidents in any of the three categories often result in serious damage to equipment, as well as curtailment of production.

National Record Appalling

It is appalling that civilized people on this continent, Mr. Soughton emphasized, should be killing each other off faster in automobile accidents than we are killed off in wars. In fact, the ratio is 3-to-1. Last December the millionth traffic fatality was registered in the United States since the automobile was invented 50 years ago, while at about the same time the millionth U.S. war casualty in 150 years was occurring in Korea.

"Most people who get involved in accidents," Mr. Soughton concluded, "failed to do just one thing: they didn't use their heads. We must help to teach people that in order to be accident-free they must use all of their skills to protect themselves against injury. This training, to be thoroughly effective, should start in the schools and continue throughout life. Next to saving a man's soul, there is probably nothing more important than saving his life or limb. May I urge that . . . consideration of the physical safety of your members . . . ought to be actively incorporated into union affairs. The work of welfare committees in assisting injured union members is admirable. But how much better it would be if education committees had helped the injured man to prevent the accident . . . We must invest in the safety of each one of the 32,000 workers whom we represent by expanding our educational efforts in such a way as to assure maximum happiness through a minimum of injuries. This enrichment can be assured if we each firmly resolve to redouble our efforts. Let us continually bear in mind this fact: We must sell safety for the same reason that clothes must be sold—people need both."

Safety Executive Committee Meets in Florida

Members of the executive committee of the Pulp and Paper Section, National Safety Council, are to meet April 23 at the Dixie Sherman Hotel in Panama City, Fla. Various committee reports and problems brought to the attention of those present will be discussed. General chairman of the group is Harley B. Goodrich of Strathmore Paper Co., West Springfield, Mass.

Representatives of the various divisions who were expected to attend were as follows: *Pulpwood Logging Division*—Fred T. Morrish (chairman), Ontario-Minnesota Pulp & Paper Co., Ltd., Seth Jackson, U.S. Forest Service, and Harry H. Jefferson, American Pulpwood Association; *Pulp Manufacturing Division*—Julius A. Draper (chairman), Consolidated Paper Corp. Ltd., D. V. Hill, Mead Corp., and Marion L. Hodges, West Virginia Pulp & Paper Co.; *Paper Manufacturing Division*—E. B. Lambton (chairman), St. Regis Paper Co., Francis H. Wagner, Mead Corp., and James N. Conway, Scott Paper Co.; *Paper Converting Division*—Robert W. Gray (chairman), Union Bag & Paper Corp., R. G. Belknap, Bemis Bros. Bag Co., A. O. Vranek, Container Corp. of America, Hugh Jackson, Johns-Manville Corp., Gordon Allen, Wood Conversion Co., and Vincent P. Coulon, Sealright Co., Inc.

Other committee chairmen expected include: *Contest*—A. Scott Dowd, THE PAPER INDUSTRY; *Program*—A. E. Minor, Ontario-Minnesota Pulp & Paper Co. Ltd.; *News Letter*—Arthur Carle, Northwest Paper Co.; *Membership*—Dallas E. Henry, Southern Advance Bag & Paper Co. The staff representative from the National Safety Council is Harold Alley.

Longview Fibre Wins West Coast Award

Longview Fibre Co. won the Governor's Trophy presented at the 1952 Labor-Management Safety Conference sponsored by the Pacific Coast Association of Pulp and Paper Manufacturers, the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, and the International Brotherhood of Paper Makers. The meeting, which was attended by 200 delegates, was held January 24-25 at the Winthrop Hotel in Tacoma.

It was the second time that Longview had won the trophy. The firm had an accident frequency of 3.08 per million man-hours worked. Other rates were as follows: Rayonier, Inc., Port Angeles, 3.19; Crown Zellerbach, Port Townsend, 3.54, and Crown Zellerbach, Camas, 3.67.

Awards for "meritorious service in industrial safety" were presented to O. R. Hartwig, general safety supervisor for Crown Zellerbach and to John Sherman, Tacoma, vice president of the International Brotherhoood of Pulp, Sulphite and Paper Mill Workers.

For having the best safety record in the State of Washington for the five years from 1947 through 1951, the Port Townsend Division of Crown Zellerbach was awarded a plaque given jointly by the Manufacturers Association and the two unions. The plant had a frequency of 5.13 for those years.

Marinette Paper Co.,
Marinette, Wis., launched its 1952 safety program with a banquet February 7. The theme of this year's drive is, "A Banner Year for Safety." The mill safety manager, Bob Blunden, described the program.

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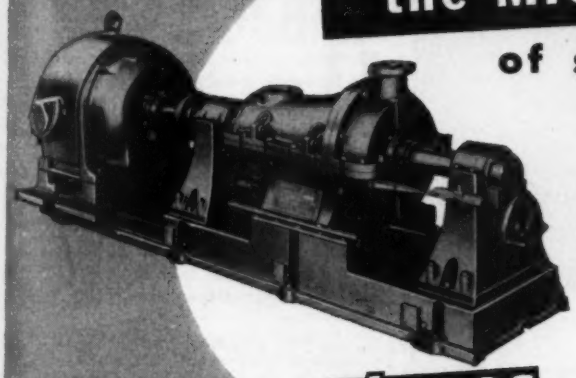

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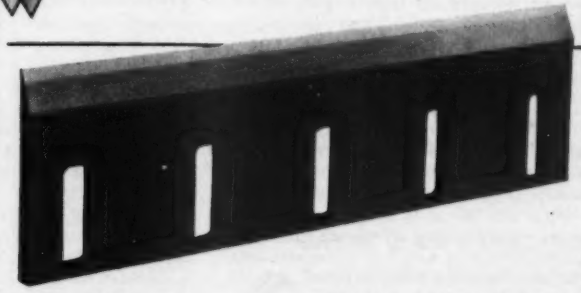

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Foreign Abstracts

Modern paper mill of the Papeteries de la Chapelle

French papermaking

From a German point of view, the author gives a vivid picture of the present status and the history of papermaking in France (after a rather extensive trip). Much of the article is devoted to a description of the modern paper mill (in Rouen) of the Papeteries de la Chapelle, where newsprint and magazine papers are manufactured. The interesting papermaking museum, at Ambert, in the Laga valley is also well described with numerous illustrations. Hans Kotte. *Allg. Papier-Rundschau* (1951). 934-37; 974-78; 1024-29. (In German.)

Determination of lignin in wood pulp

Prior to the test, the pulp should be thoroughly extracted with dichloromethane for at least six hours, dried at 60 C. (overnight) and shredded. About ten milligrams of accurately weighed, extracted pulp is added to a 100-150 ml. flask (with ground-in glass stopper) and treated with 25 ml. phosphoric acid of the highest purity and preferably in 80 per cent strength. The acid is added slowly over a period of about five minutes from a pipette. (An alternative method permits addition of the acid directly to the flask, weighing the acid and calculating the volume.) In either case, the stoppered flask is shaken overnight on a machine, and on the following day the absorbancy at 280 μ is determined spectrophotometrically, using a Beckman model DV spectrophotometer with 1.00 cm. quartz cells. For very accurate determinations, the absorbancy is measured several times at intervals and then extrapolated to zero time (i.e., directly after mixing the pulp and acid).

Beer's law is valid over an appreciable concentration range and the absorbancy values are reproducible. The ultraviolet absorption curves for calcium lignosulphonate in water are practically identical with those in phosphoric acid. Studies with thiolignin, native lignin, unbleached sulphite and kraft pulps and spruce wood, all indicate that there is good correspondence in absorbing measurements, and that lignin is actually responsible for the absorption. Absorbancy values found for unbleached sulphite pulps are of a magnitude that can be computed from the absorbancy coefficient (and lignin content as determined by the Klason procedure). Per Olof Bethge, Gunnar Gran, and Karl-Erik Ohlsson. *Svensk Papperstidn.* 55, 44-48 (1952). (In English.)

Opacity of paper pulps

The author has recently published extensively in this field, and these are two of his most recent articles. The influence of the sulphite cook on the opacity of pulps produced under a variety of conditions was studied. The pulps were bleached with chlorite, and the specific scattering coefficient was determined on both wet and dry pulp sheets. Analytical and cooking data are fully tabulated.

It is well known that the opacity of a pulp increases during the sulphite cook. Irrespective of the cooking conditions, opacity is closely related to pulp yield after bleaching. This appears to be the result of selective solution of amorphous interfibrillar hemicelluloses, with concomitant formation of hollow spaces between fibrils, thus causing light scattering in the fiber wall. Furthermore, hemicelluloses act as adhesives, thus contributing to greater density, both in the paper and in individual fibers. Due to both of these facts, the solution of interfibrillar materials must increase pulp opacity.

With lower yields within the yield range of 40-50 per cent, opacity increases. On the other hand, between 55-70 per cent yields, a decrease has little effect on opacity. It is proposed that these hemicelluloses which influence opacity are located not within the (secondary) cell wall, but in the middle lamella (between the cells).

During beating, opacity decreases more rapidly in strong than in soft pulps, and after beating, there is a linear relationship between the specific scattering coefficient and the density of the paper. This correlation, however, is different for different types of pulp. Paper made from strong pulps are more bulky than are those *of the same opacity*, made from soft pulps. An increase in density of 0.1 unit corresponds to a drop in the specific scattering coefficient of 60 units. (This is true for all types of sulphite pulps.) Under similar conditions of beating, the author found a very close relationship between opacity and breaking length. Thus, an increase in the breaking length of 1000 meters corresponds to a decrease in specific scattering coefficient of about 30 units.

In the case of kraft pulps (in which both cooking time and total alkali were varied) and in which the pulps were then bleached with chlorine and hypochlorite, or with acidified chlorite, the pulp opacities increased with the time of cooking, and with increasing (total) alkali. As in the case of sulphite pulps, the opacity of bleached sulphate pulps increased with decrease in yield. However, the opacity of sulphate pulps was higher than was those of sulphite pulps (obtained in the same yield). Nor did the decrease in yield influence opacity as much as in the case of sulphite pulps. Sulphate pulps had the same bulk as strong sulphite pulps but higher tensile strength properties.

In kraft pulps an increase in breaking length of 1000 meters corresponded to only 18 units decrease in specific scattering coefficient. Thus, kraft pulps serve better than do sulphite pulps when both high strength and high opacity are required. This difference between sulphite and sulphate pulps is discussed at some length. It is apparently not dependent on hemicellulose content or on moisture sorption, but may perhaps be due to formation of "structural bonds" in the fiber during the kraft cook—bonds occurring within the hemicellulose portion. The results are considered in the light of the "McKinney hypothesis" [cf. *Paper Trade J.* 122, No. 4, 58 (1946)]. H. W. Giertz. *Svensk Papperstidn.* 54, 769-75 (1951); 55, 72-77 (1952). (In Swedish, with English summaries.)

Polymolecularity of birch holocellulose

The wood used was paper birch (*Betula papyrifera*), and a study was made of the degree of polymerization (D.P.) of the cellulose and hemicelluloses of this wood. The average D.P. of the cellulose, estimated viscometrically after direct nitration of the wood, was 2975. The D.P. of the hemicelluloses was about 220, this being determined from the viscosity in cupriethylendiamine (but using the Staudinger constant for cuprammonium hydroxide). The hemicelluloses showed little polymolecularity, but the cellulose showed a wide range (D.Ps varying from 200 to 4,000).

The greater part of the study was devoted to a comparison of the various methods used for isolating holocellulose. It was found that the chlorite procedure caused more cellulose degradation (together with slight loss of pentosans) than did a modification of the Van Beckum-Ritter technique; hence, this method was used (as follows). Five hundred gm. air-dried, extractive-free wood meal was stirred vigorously in 4 liters of *ice* water and chlorine was introduced through six inlet tubes for 5 minutes at zero deg. C. The filtered product was washed twice with water and thrice with ethanol, and then stirred 5 minutes in a boiling 3 per cent ethanolamine solution in ethanol. The refiltered residue was then again extracted

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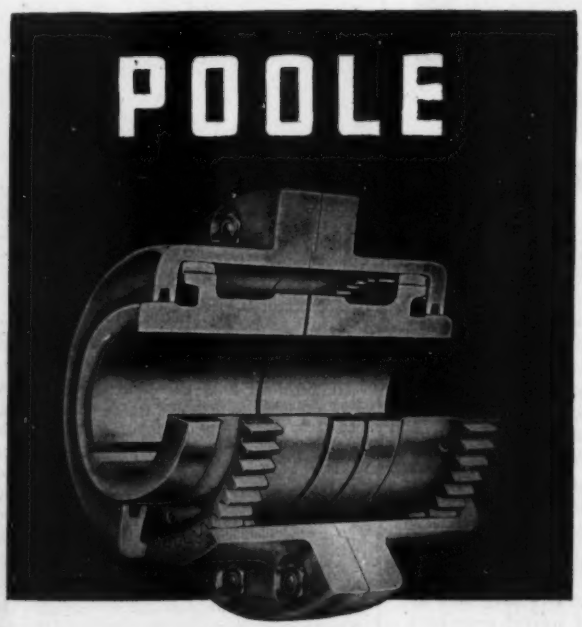

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with an ethanolamine-ethanol solution. The chlorination and extraction were repeated twice, and final washings were made with ethanol followed by ether. The product was then air-dried and still retained 0.69 per cent nitrogen (equivalent to 3 per cent ethanolamine). The method is rapid and offers advantages over the chlorite procedures.

The authors give detailed descriptions of analytical, isolation and fractionation techniques together with 19 tables, 4 graphs and 51 literature references. Although this work was carried out at Syracuse, N.Y., it was published in Sweden. T. E. Timell and E. C. Jahn. *Svensk Papperstidn.* 54, 831-845 (1951). (In English).

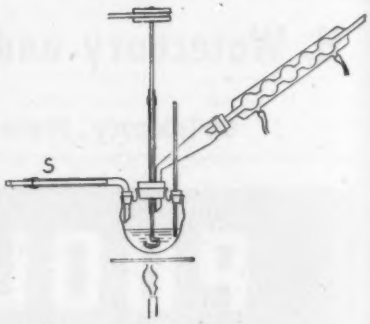
Influence of the tension wood on the technological utilization of poplar woods

Tension wood (I) in various poplar species greatly influences their properties and utilization. With increasing per cent I in the wood, kraft pulp yields increase, the highest (65.1 per cent) having been obtained from a sample of *Populus trichocarpa* (containing 71 per cent I). Alpha cellulose content and brightness were also higher in pulps from I than those from normal poplar wood (II). On the other hand, the pentosan values of pulp from I are lower than those from II, and pulps from I show markedly lower strength properties when normal cooking conditions are used. This is reflected in loss of breaking length, folding endurance, Brecht-Imset internal tear and in burst. The percentage of I in a sample of wood should be determined before delignification, so as to obtain optimum cooking conditions.

The following *Populus* species (other than *P. trichocarpa*) were subjected to pulping operations: *P. serotina* (I *and* II), *P. pseudogelrica* (I *and* II), *P. grandifolia* (I *and* II), *P. canescens* (I), *P. berolinensis* (I), *P. regenerata grandis* (I *and* II), *P. tremula* (II), *P. robusta* (I *and* II), *P. generosa* (I *and* II) and *P. charkowiensis* (I *and* II). These and other species of Populus were also examined for oven dry density which, in general, is considerably higher for I than for II. Georg Jayme, Marianne Harders-Steinhaüser and Wilhelm Mohrberg (Tech. Hochschule, Darmstadt, Germany). *Das Papier.* 5, 411-17, 455-57 and 504-507 (1951). (In German.)

Polymerization of sulphate turpentine

In 1943-1947 about 1700 tons of lubricating oils were prepared in Finland through the polymerization of sulphate turpentine.



The polymerization could be effected at about 135-175 C., by using aluminum chloride, aluminum silicate or Fullers earth as catalysts in amounts of approximately 2.5 to 5 per cent of the weight of the turpentine.

Prior to polymerization, the crude turps must be distilled. The "carene" fraction gives almost as good a yield of the lubricating oil as does the pinent fraction. In general, it is well to use the portion boiling between 150 and 200 C. The resulting lubricating oil has a relatively high iodine number (60-80) and has a slight tendency towards "drying." This disadvantage may be overcome by heating the reaction mixture *after* the polymerization, to about 215-300 C., after which the iodine number is reduced below 20.

Polymerizations may be carried out at atmospheric pressure (or at higher pressures). When superatmospheric pressures are used, smaller amounts of catalysts can be employed. The yields of lubricating oil are in the range of 55 to 67 per cent of the distilled turpentine. Besides this there is a light oil fraction (22-35 per cent) containing largely cymene and saturated and unsaturated alicyclic hydrocarbons. The accompanying figure shows the small scale

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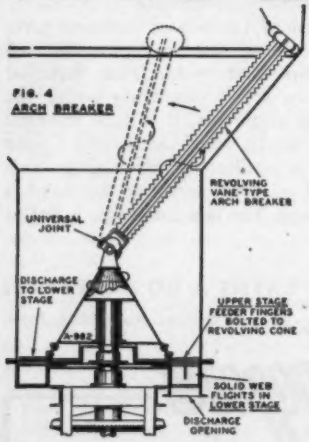

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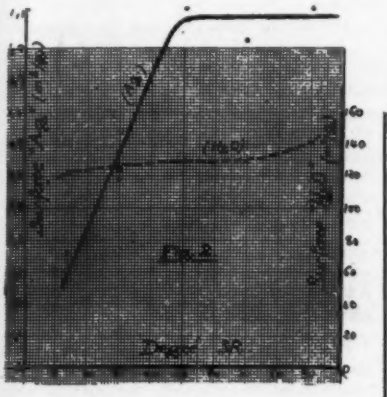
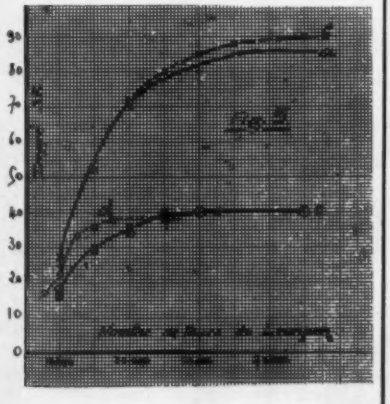
laboratory apparatus used in turpentine polymerization studies. Terje Enkvist and Marja-Sisko Ilvessalo. *Paper and Timber* (Finland). 34, 5-10 (1952). (In Swedish with English summary.)

A study in beating

Linters stock (14 deg. Schopper-Riegler [S-R] when unbeaten) was hydrated in a Lampén mill to 30, 50, 70, and, finally, to 90 deg. S-R. The "surfaces" of the fibers so treated were then measured, (1) by means

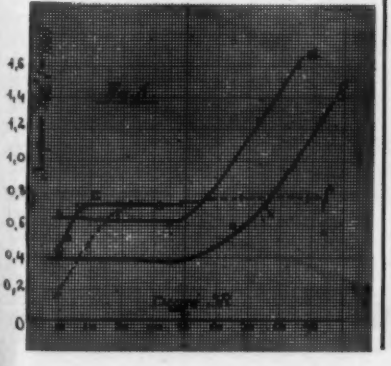


of the Clarke silvering technique; (2) by nitrogen sorption at —195 deg. (cf. Brunauer. Emmett, and Teller, *J. Am. Chem. Soc.* 60, 309 [1938]), and (3) by water



vapor adsorption. The results are tabulated in terms of "square meters per gram" and are very different for the three methods used.

Presumably, different surfaces are being



measured. This is shown in Fig. 2 for adsorption of silver (Ag) and for water. These differences are discussed fully. According to the author, the silvering procedure represents the changes due to fibrillation caused by beating. The "nitrogen surface" is correlated with plasticity of the fibers and represents the over-all surface accessible to the gas.

The significance of the water vapor determinations is doubtful. The variations in these "surfaces" is a function of the degree of beating and appears to be correlated with such pulp qualities as burst, tensile strength and folding endurance. However, the results obtained with beaten linters cannot be applied directly to commercial chemical pulps; e.g., a kraft pulp was divided into three parts: (*a*) was untreated; (b) was delignified by chlorite, and (c) was delignified and treated with caustic, to remove hemicelluloses. The effects of beating (a), (b), and (c) in a Lampén mill are shown in Fig. 5 (where deg. S-R is plotted against the number of revolutions). The curve (d) in the same figure is for chlorited, caustic-treated linters.

The hydration effects of hemicelluloses are noteworthy, and this is also shown by means of the silvering technique which shows a marked increase in silver deposition for (a) and (b) between 40 deg. S-R and 90 deg. S-R (over that of pulp [c]) (cf. Fig. 6). J. Escard, A. Saulguin, and E. Girardy. *Bull. assoc. tech. de l'ind. papetiere.* 5, No. 7, 366-74 (1951). (In French).

The Lindsay method (right) uses a light layer of plastic instead of wire lacing (below) to contain the break.

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Sometimes the advantage is even greater with Lindsay's new, proven method of repairing breaks in the edges of Fourdrinier wire cloth. A typical experience shows that several better repairs can be completed within five minutes, often lasting many days longer. You yourself can easily perform the operation at a very low cost. Ask us for the brief, remarkable details . . The Lindsay Wire Weaving Company (*Serving the Paper Industry Since 1903*), Cleveland 10, Ohio.

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FOR PAPER MILLS

Removal of lignosulphonic acid from pulps with water

Strong sulphite pulps, which have been treated with acid so that they are "saturated with hydrogen-ion," will very slowly release their lignosulphonic acid on aqueous extraction, even at room temperature. The rate of liberation is not affected by increasing the acidity of the water used in extraction (even up to 2.5 *N* HCl). Initially, the rate of removal is in inverse proportion to the amount of lignosulphonic acid freed, and the author has attempted a mathematical expression to show the rate of acid liberation. This "liberation" appears to be a hydrolysis in which one new acid group (probably a carboxyl grouping) is freed for each sulphonic acid group present, and this is present in the lignosulphonic acid group in the solution.

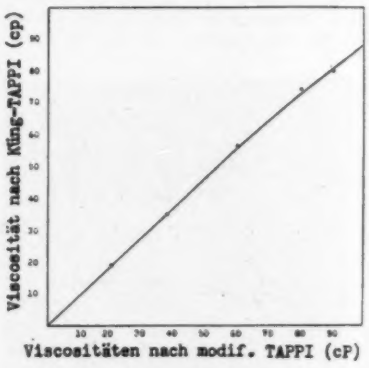
In the solid phase (i.e., in the pulp), this group apparently bonds lignin to lignin. In the solid sulphonic acid there appears to be another, weakly acidic group (possibly phenolic) for every two sulphonic acid groups. Such a weak group is also present in the dissolved sulphonic acid, which appears to be unstable, inasmuch as its acidity decreases on standing in aqueous solution (due possibly to molecular rearrangement). The dissolved acid may be precipitated both with mercurous and with mercuric nitrates (*not* with mercuric chloride) and only gradually with lead nitrate. Methods for analyzing extracted lignosulphonic acid are given in detail.

The following areas are also discussed: decrease in removal of lignosulphonic acid with time, and the constant (K) for removing lignosulphonic acid (x in mg.) within the time (t). The expression $K = x^2/t$ varies very little (for a specific pulp), within the first 200-300 hours of aqueous treatment.

The authors also explored the extraction of the acid with methanol, and the effect of temperature on the rate of aqueous extraction; the color changes in the aqueous extracts, *et al.* Fifteen tables and 10 references are given. The contribution comes from the Technische Hochschule, in Stockholm. Carl Kullgren. *Svensk Papperstidn.* 55, 1-12 (1952). (In German, with English summary).

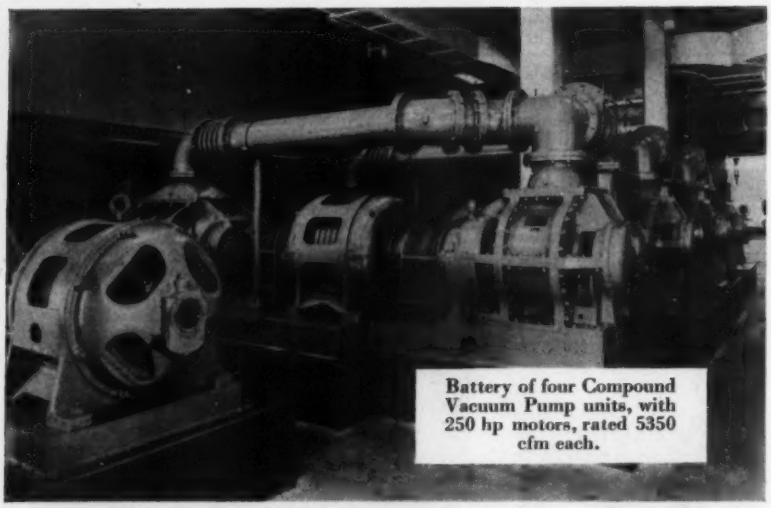
Rapid method for determining cuprammonium

In the hope of effecting a more rapid means of solubilizing cellulosic matters in cuprammonium hydroxide, the mixture was subjected to ultrasonic waves, but inasmuch as these caused depolymerization, the experiments were discontinued. Various commercial wetting agents were then tried, and of these the so-called Invadin-JFC (I) (manufactured by Ciba AG in Basle, Switzerland) proved suitable for various pulps when the Küng-Tappi procedure was used [cf. A. Küng, *Papierfabrikant.* 35, 369 (1937)].



The cuprammonium solution was made up in the usual manner and to 1 liter were added 2 grams sucrose and 1 cc. of I. To the mixture of "cuoxam" and cellulose in the viscometer were added 2 drops of 50 per cent of an aqueous pyrogallol solution, and the mixture rotated 5-10 minutes in a thermostat. The viscosity determination was made at 20 C., after a 10-15 minute period.

The correlation of viscosities between the *modified* Küng procedure (abscissa) and the *original* Küng-Tappi method (ordinate) is shown by the curve in the accompanying figure. M. Ruteshauser and A. Weber [Cellulosefabrik Attisholz, A-G., Switzerland]. *Svensk Papperstidn.* 55, 67-71 (1952). (In German).


Battery of four Compound Vacuum Pump units, with 250 hp motors, rated 5350 cfm each.

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To maintain the quality and quantity of your paper production, your vacuum pumps must rate high when compared to these basic values, which are built into Roots-Connersville equipment. Details are available in our Bulletin 50-B-13 on Cycloidal Pumps for Paper Mill Operation. Send for a copy—or let our engineers work with you in selection of vacuum pumps for your individual needs.

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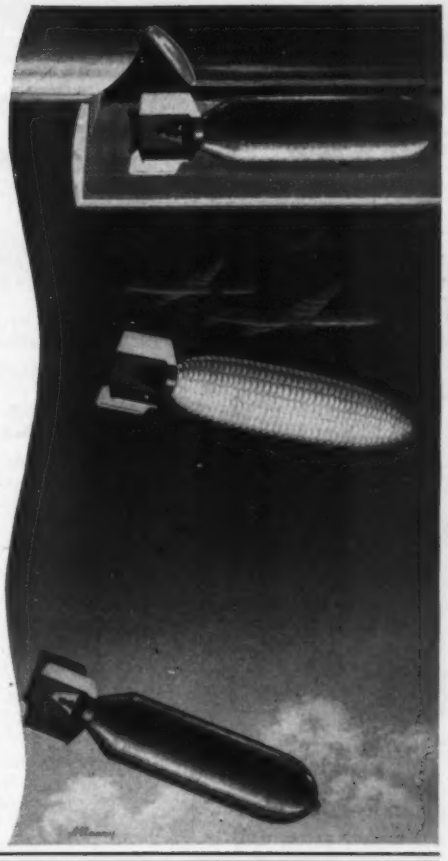
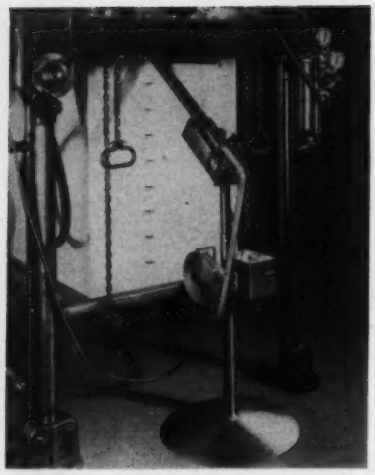


the *New* Gilbert & Nash 434 UG Wire & Felt Guide

This newest guide of the 50 year old Gilbert and Nash line features Low Head design and enclosed reduction gear. Speed to 2000 1/min. Engineered throughout to traditional Gilbert and Nash standards. Write for complete specifications.

Gilbert & Nash Company • Appleton, Wisconsin

The Paper Industry New Products



Sheet counter and marker

Sheets being stacked on skids at the delivery end of printing presses, sheeters, diecutters and similar machines can be counted and marked automatically with the automatic sheet counter and marker. Counting time and errors are eliminated. The sheets are counted as fast as they come through the press, with marking tabs inserted at the pre-determined intervals.

This machine is available in two portable models, as pictured, or a model which may be mounted on the delivery of a press or other machine for continuous work. When equipped with the Cyclo-Monitor Control, sheets may be marked at any interval from 1 to 2,000 and all even numbers from 2,000 to 4,000 at speeds up to 300 counts per minute.

The angular adjustment of the inserter head and the telescoping column (furnished in the portable models) make this equipment suitable for use with either high or low press delivery piles. Extra reach is available to mark narrow sheets which may be stacked at a considerable distance from the outer edge of a wide skid. All positioning adjustments and count settings are made without tools. *Counter and Control Corp., 5225 W. Elestric Ave., Milwaukee 14, Wis.*

Line-type purifier

Another in the new series of Hi-eF purifiers recently developed is the line-type purifier for installation on compressed air, gas, vapor and steam lines. This unit is the latest component in a series of purifiers designed for better and more efficient removal of entrainment. Even at tremendous velocities, the entrainment is efficiently removed.

Advantages of this purifier are low cost, no moving parts and the self-cleaning action which eliminates the need for maintenance, good design which reduces pressure drop to a minimum, large slug capacities and broad range of capacities.

The unit is designed, built, and stamped to ASME Code for unfired pressure vessels. Low-pressure line purifiers are not Code stamped. All units have forged steel flanges with bodies of welded steel construction, both to suit pressure specified. Special designs are available upon application. *V. D. Anderson Co., 1935 West 96th St., Cleveland 2, Ohio.*

Stainless steel tube

A ⅝ in. x 18 gauge tube made of Carpenter type 304 stainless proved in a recent test in a condenser for the boiler feed water system of a high-pressure turbo-generator that it is resistant to corrosion. A 70-30 cupra-nickel tube of the same size used in this test showed signs of extreme corrosion, particularly at points where steel hangers contacted the tube. *The Carpenter Steel Co., Alloy Tube Div., Union, N.J.*

Sight flow indicator

The Trin-Vue sight flow indicator, recently introduced to the market, is designed for checking the flow of a fluid in piping systems and for visual examination of the fluid in the line. Two windows located on opposite sides of the Trin-Vue permit maximum visibility and examination of the fluid. The windows in the sight flow indicator are sealed in the unit by use of O-Ring gaskets and Truarc retaining rings. This sight glass construction permits a tight, positive seal, made tighter the greater the pressure or vacuum applied.

In addition, there are no bolts to be adjusted and pressure on the glass in the unit is equally distributed at all times. Thus, there are no uneven stresses to cause glass failure or leakage under temperature or pressure changes.

Other features of the sight flow indicator are its light weight, tamperproof construction, and new type welded design. It is available in a range of special materials, sizes, and pressure ratings. In its internal

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Territory: MAINE — NEW HAMPSHIRE — VERMONT — RHODE ISLAND MASSACHUSETTS — CONNECTICUT AND NEW YORK.

"Don" Hall probably was born with a sales instinct. From his early Maine boyhood he wanted to be a salesman. Although much interested in sports at Wilton Academy, Wilton, Maine, he never deviated from his goal, going right into selling upon graduation.

After serving the Pulp and Paper Industry as a sales engineer for the past twenty-six years, it is no wonder that Don (several members of whose family before him were associated with paper mills) has acquired specialized knowledge and experience now proving of increasing value to the Pulp and Paper Industry which we serve.

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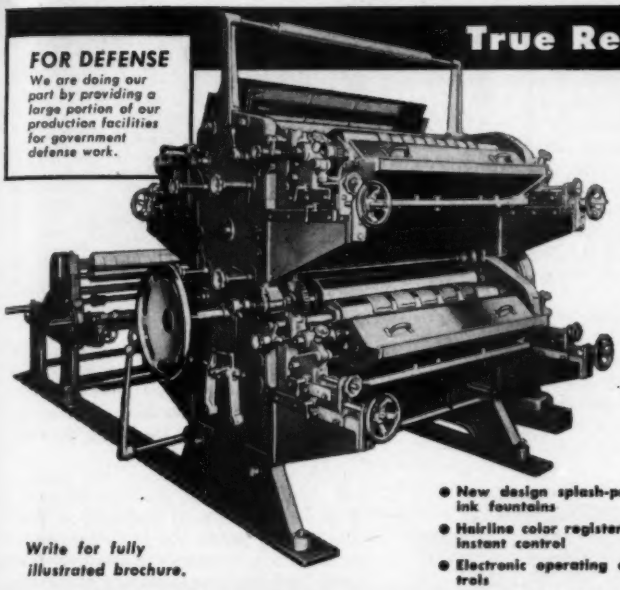

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Economical High-speed Production on the HUDSON-SHARP STACK TYPE ANILINE PRESS

...Ideal for printing transparent films, lightweight paper boards, glassines, foils and greaseproofs

Advanced in design, the Hudson-Sharp A-2 stack type Aniline Press is designed to incorporate from one to four colors — either installed or added later — with each color including standard type fountain and individual tympan roll. Built in web ranges from 30" minimum to 45" maximum with print repeats from 10 to 30 inches. All practical operating speeds, dependent upon type of material printed and drying equipment. Many extras can be added, including synchronized print repeat sheeter, individual color throw-outs, and overhead leads and rewinders — according to individual requirements. Ideal for printing materials of low tensile strength for numerous uses such as labels, gift wraps, box coverings, industrial wraps etc. Write for complete information on this and other Aniline and Roto presses.

- New design splash-proof ink fountains
- Hairline color register — instant control
- Electronic operating controls
- Free wheeling rotating ink rollers
- Constant tension material feed
- Solid, rigid, compact frame construction
- Reduces waste — fewer print rejects
- Maximum color printing flexibility

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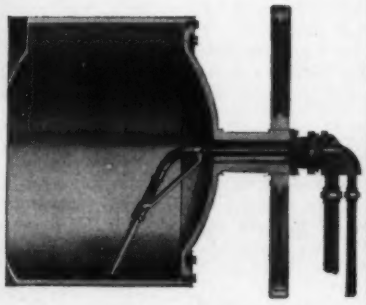
Double Barrel Reason

Reaction of ¾" Auto-Flex in 48" dia. dryer. Very low leverage.

Reaction of ¾" ordinary bent pipe. Syphon in 48" dia. dryer. High leverage.



for using Midwest Auto-Flex Syphons

Midwest Auto-Flex syphons have been on the market for years and many thousands are in service for two very excellent reasons—they hold their position—they wear indefinitely.

1. The spring and brace holds the end of the pipe at the proper distance from the bottom of the dryer. It cannot possibly take any other position — hence, proper water and air removal.

2. The cantilever leverage exerted is lower than with bent pipe syphons, only 170# vs 354#. It clears instead of dragging on the journal and rapidly wearing out.

Order a get acquainted dozen. Performance as stated guaranteed.

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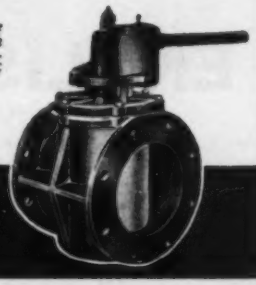
VALVE LEAKAGE COSTS MONEY!

STOP YOUR LOSSES WITH DeZURIK VALVES. Every leaking valve is an expensive valve, piling up costs in line-losses as well as in shut-downs, clean-up time, repairs and replacements. DeZURIK Easy-Operating PLUG VALVES will stop those losses in your plant because they STOP LEAKS. On any flow—air, liquid, fibrous, slurry—DeZurik's long-life, rubber-faced plugs seal dead-tight every time. They're YOUR ANSWER to YOUR PROBLEM.

Write for complete catalog of DeZurik friction-free EASY-OPERATING VALVES.



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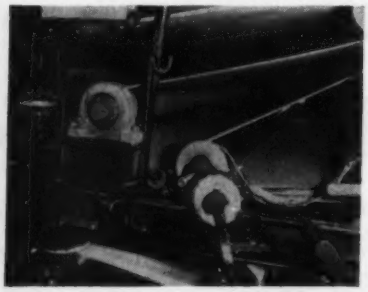
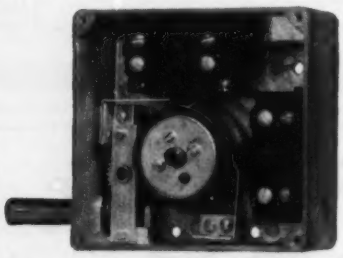
design, the Trin-Vue is offered as a plain sight flow indicator as standard equipment. Flapper or drip-lip design are optional. *Trinity Equipment Corp. 472 Westfield Ave., East, Roselle Park, N.J.*



Felt expander

Used on felts to improve the handling of the felt and to improve the felt's handling of paper, the "Free Wheeling" expander eliminates the need of worm rolls, keeps the felt at full width, makes it possible to apply the proper amount of tension on the felt, and eliminates the bowing of the seam. Where showers are used to clean the felt, it opens the felt for a better cleaning action. *Mount Hope Machinery Co., Taunton, Mass.*



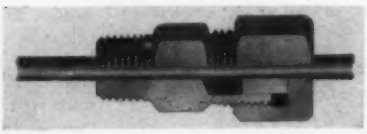
Limit switch

A new rotating-type limit switch for application where reversing operation is to be co-ordinated with the number of revolutions of a motor shaft or driven equipment has recently been announced.

The switch consists of two size 2 switchettes, each having one normally open and one normally closed circuit. Switch units are operated independently by cams rotated through a worm and gear reduction from a shaft extending outside the case. It can be adjusted to operate from 4 to 110 turns of the driving shaft with 5 turns overtravel in either direction. Unlimited overtravel is possible without damage to the switch.

All parts are readily accessible for easy installation, adjustment, and maintenance. The standard form of the new switch is housed in a zinc die-cast case with removable cover and measures approximately 4 in. square and 2 in. deep. Also available are watertight and explosion-proof forms in cast-iron cases.

For easy replacement of old switches, the new model is similar in size and shape to previous forms, including locations of the mounting holes. For replacement of certain older types, an adapter bracket is available for mounting the new switch. *General Electric Co., Schenectady 5, N. Y.*



Packing glands

A new series of stainless steel packing glands designed for general use and ease of installation in process control, pilot plant or laboratory installations has recently been developed. They are available to accommodate tubes from ⅛ in. to 13/32 in. (⅛ in. I.P.S.) outside diameter, at present.

Type PG-2 and PG-4 packing glands are furnished with asbestos-graphite packing and may be used as small stuffing boxes or to seal static lines, thermocouple wells, dial-type thermometer stems, or any other round tubes or rods. Type PG-3 employs powdered Talc as a sealant and is therefore chemically inert and may be used at temperatures exceeding 1400 F. Type PG-3 packing glands cannot be used as stuffing boxes for moving parts, but provide pressure or vacuum seals for stationary tubes.

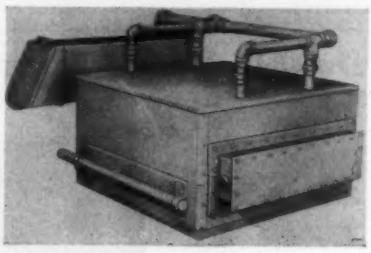
The inside diameter of all packing glands are bored to customer's specifications. Any plastic or other satisfactory packing material may be used in place of the material furnished with the glands. All units are made of type 303 stainless steel throughout. *Conax Corp., 4515 Main St., Buffalo 21, N. Y.*

Roll head paster

A 48-inch roll head paster, Model A-48, has recently been put on the market. It speeds up a job which had previously been almost entirely manual and decreases the adhesive consumption, according to the manufacturers.

Used with an attachment, the machine will apply adhesive to cardboard or leather up to one-half inch in thickness, in addition to heavy paper. An adjustable feature gives positive control of quantity of glue applied and also insures uniform application to all parts of the material to which it is being applied.

An exclusive feature is the fact that gears and bearings are all outside of the glue area and, therefore, do not undergo the hard wear customary in machines where glue can get to the bearings. The glue pan slides out for easy cleaning. *King Sales & Engineering Co., 431 Folsom St., San Francisco, Calif.*



Dryer

A new super heat dryer features the use of high temperature for ink drying and is adaptable to steam setting of inks and dye aging. The web is protected at all times from damaging heat by a special cooling device which permits it to remain for long

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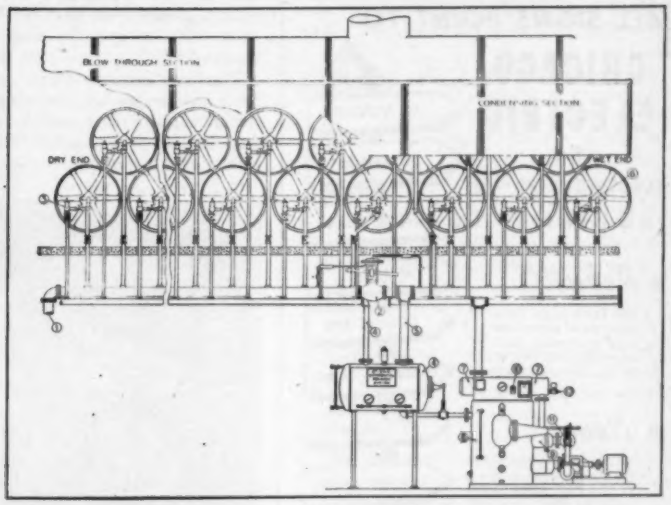
New Stickle Vacuum Differential Drainage Cuts fuel costs 10 to 15%



Installed, as above, the new Stickle Vacuum Differential Drainage employing improved Stickle Vacuum Pump, boosts production—cuts costs.

Free your dryers of condensate and air—quickly and economically. Install new Stickle Vacuum Differential Drainage — an all-Stickle unit, all-profitable for you!

You are always *sure* of proper drainage, whether your machines operate at above or below atmospheric pressure. You simply reset pump controls to meet whatever pressure changes are required.

New Stickle Pump—designed for Vacuums up to 28″—saves you money many ways. Every vital part is easily accessible, permitting quick, easy inspection and maintenance. Built-in heat exchanger eliminates costly cooling equipment. No close clearances—no "rub" anywhere!

It's to your best interest to get all the facts. We've wrapped them up for you in a new, *free* bulletin—No. 260. Write for it today!

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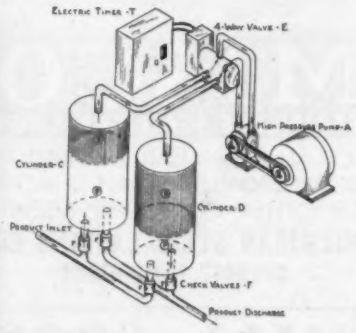
idle periods in the dryer while heat is held without danger of injury to the web from contact with overhead air or supporting parts; thus, almost any kind of material may be run through it.

Temperatures ranging from 70 to 800F. may be used. The electrically heated unit is automatically controlled, with independent safety control in the event of operational failure. *Champlain Co., Inc., Bloomfield, N.J.*



Slurry pump

A new pump which readily transfers products until now considered difficult or impossible to pump has recently been developed. It is called the Hydrex pump.

Pumping action is accomplished by two fluid pistons. As shown in the diagram: a high pressure pump (A) pumps hydraulic fluid (B) alternately to and from cylinders (C) and (D). A four-way hydraulic valve (E), actuated by a solenoid (T), controls the fluid direction. Cylinders are made of stainless steel or other materials where required.

This pump is designed to handle slurries, very viscous pastes, abrasive or corrosive fluids, and suspended solids without damage to the pump. Where contact between the pumping medium and the product must be avoided a suitable membrane is provided. There are no bearings, mechanical pistons, packing glands, valves or impellers in the cylinders. *Manton-Gaulin Mfg. Co., 65 Garden St., Everett 49, Mass.*

Purge meter

A new multiple tube purge meter in a single integral unit is available in two, four, or six tube units. Known as the Brooks-Mite multi-flow purge meter, this plastic rotameter replaces a similar number of single tube meters or bubblers for metering and regulating small flows of liquids or gasses.

All the metering tubes and piping connections are precision bored in a block of acrylic plastic, which eliminates packing glands and breakable glass tubes. The meter is available with either a common manifold inlet for all the metering tubes or individual inlets, as desired. Rate of flow adjustment is made with separate Flo-Mite needle control valves for each tube. In addition, a standard bezel is obtainable for flush panel mounting of any of these meters. *Brooks Rotameter Co., Box 432, Dept. BB, Lansdale, Pa.*

Tachometer

High accuracy, ¼ per cent of any speed being measured is guaranteed with the new Metron tachometer now available. It can be used in turbine overspeed tests, production motor test stands, dynamometer test stands, laboratories, and similar precision speed measuring applications.

Ten overlapping and adjoining ranges, instantly selected by rotary switch, provide more than a 10 to 1 spread in speed. The

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Our repair and rebuilding facilities are of the finest in the country. When you need help to keep your plants running and producing be sure to call.
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1. Increase your filter plant output without increasing the size of your present plant.
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Many paper mills in all sections of the country now use ANTHRAFILT exclusively. Why not write us today for full details, test samples, recommendations and quotations?
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Anthracite Institute Bldg.
Wilkes-Barre, Pennsylvania
*Trade Mark Reg. U. S. Patent Off.

indicating meter has three scales. Speeds of 36 to 100,000 rpm are easily covered by three models.

The fixed installation indicator is suitable for panel or bracket mounting and has a crackle finish. The indicating meter is mounted in sponge rubber. *Metron Instrument Co., 432 Lincoln St., Denver 9, Colo.*

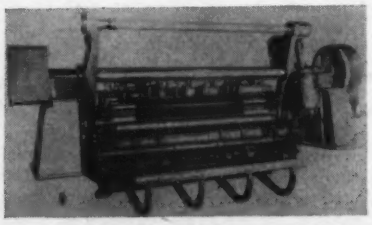
Skid lift

Designed for lifting stacks of heavy material, this skid lift will maintain the top of the stack at any desired height, or it will raise or lower the stack to any position required, at the touch of a button. This machine reduces the danger of strain to workers and helps to eliminate fatigue.

The skid lift will lift up to 3,000 lb. of material and will accommodate skids from 22 in. x 34 in. to 35 in. x 45 in. There is also a larger model for maximum skid size 44 in. x 58 in. Material may be stacked as high as 83¾ in., including skid. Power is supplied by a ¼ hp 110 volt ac-dc electric motor. All controls are fully electrical. *Walbert Machine Co., 819 East 19th St., Kansas City 8, Mo.*

Stub fork

Fork trucks have been modified by a chain manufacturer to make drum handling easier. To eliminate unnecessary handling, this manufacturer worked out its own special attachment. It is a stub fork mounted on the truck carriage which slips under the load and a latch that grips the rim of the open drum to hold it securely. This attachment makes pallets unnecessary and is easier to use for handling drums than ordinary forks would be. *The Baker-Raulang Co., Industrial Truck Div., 1250 W. 80th St., Cleveland 2, Ohio.*



Low tension winder

The Kohler Model 40 plastic winder is a new continuous automatic winder especially suited to winding of web materials which must be wound with extremely low tension values. This includes materials such as plastic film and sheeting as produced continuously from calenders, extruders and coating equipment.

Tension is positive and automatic and is maintained constant at whatever value for which it is set throughout the entire winding process. It requires no attention from the operator once the desired tension is set. Even and uniform starts are made and require no adhesive or special processing of the core or shell. The flying start mechanism changes from a fully wound roll to a new core or shell automatically without slowing down the process. *Dilts Machine Works, Fulton, New York.*

Temperature regulator

A new temperature regulator, designed as type 1005, features design simplicity which allows easy disassembly for relapping and cleaning in the field. Additional features are visual fingertip dial control, built-in strainers to protect the pilot and main valves, stainless steel seats and discs, and internal porting to eliminate external damage and minimize maintenance.

Self-contained and pilot-operated in 2-inch through 4-inch sizes, the regulator is available with 125 lb. or 250 lb. ASA flanges for steam pressures from 10 to 150 psig and for temperature control from 30 to 325

WISCONSIN WIRE WORKS, Appleton, Wis.

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STAINLESS STEEL CASTINGS
FOR ALL EQUIPMENT EXPOSED TO CORROSION BY SULPHITE ACIDS OR OTHER CORROSIVE AGENTS
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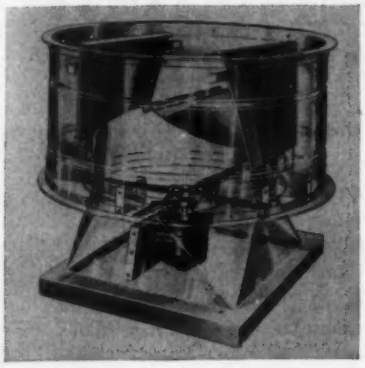
The N. P. BOWSHER Co., South Bend, Ind.

F. Adjustment range is 60 F. Eight feet of capillary tubing and a 1-inch NPT connection on the bulb are standard equipment. *Farris Stacon Corp., 521 Commercial Ave., Palisades Park, N. J.*

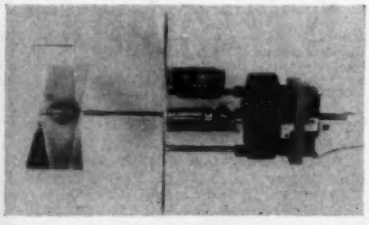


Ventilator

Designed particularly for rapid localized removal of air contaminated with smoke, fumes, dust and heat, the new Burt free exhaust fan ventilator is claimed to provide higher capacities than conventional types.

The unit is powered by a Burt axial flow fan directly connected to its motor. The air shaft extends above the fan and terminates in a pair of dampers that open and close automatically as the fan is turned on and off. Their absolute free opening allows an unrestricted volume of air to be driven vertically upward at high velocity by the axial flow fan.

Seven sizes, with motors from 1/3 to 5 hp, provide capacities ranging from 5000 to 75,550 cfm. Standard construction is in prime galvanized steel sheets, but other metals may be used. *The Burt Mfg. Co., 927 S. High St., Akron 11, Ohio.*



Bin level indicator

A new, low-cost bin level indicator known as the "Bin-Vue" has recently been introduced to the market. It has no diaphragms to give false signals and no intricate parts to go out of order. No adjustments are needed, once the indicator is installed. Insuring positive, automatic indication at the top, middle, or bottom of the bin, it provides an equally effective method for starting and stopping other equipment in automatic control systems.

The "Bin-Vue" operates with any bulk material that flows—powdered, granular, or lumpy. It is powered by a 1/2000 HP 110v, 60 cycle motor but can be supplied in any voltage, domestic or foreign, at slight additional cost. For hazardous conditions, "Bin-Vue" can be supplied in an explosion-proof model. *Convair Corp., 4156 Library Rd., Pittsburgh, Pa.*

New Products Briefs . . .

RADIAL ARM SAW—Known as "Mitermaster," this saw weighs only 50 lb. without the motor and can be used with motors of from ¼ to 1 hp, depending on individual requirements. Although designed primarily for cut-off and dadoing operations, it is used for rabbeting, ploughing and shaping. *R. W. Hendrick Co., 11 Selman St., Marblehead, Mass.*

ELECTRIC TRUCK—A new riding-type platform electric truck, the Raymond Low-Lift, speeds up the movement of skid platforms and skidded cases. It has a 4,000-lb. capacity and will travel up to 5 mph loaded, 6 mph empty. *The Raymond Corp., 8084 Madison St., Greene, N. Y.*

ROTARY PUMP—A heavy-duty, vane-type rotary pump is manufactured in both internal and external bearing design, with built-in relief valve, and can be manufactured in either standard fitted, bronze fitted or all bronze construction. All models are positive displacement, sliding vane type, in which the pressure of the liquid being pumped maintains contact of the vanes against the liner. *Worthington Pump & Machinery Corp., Harrison, N. J.*

ABSORPTION CELLS—New, low-cost matched 10mm Pyrex absorption cells for Model B and Model DU Spectrophotometers feature optically-polished outer surfaces. They are recommended for all applications in the range of 320 to 1000 millimicrons, where the critical matching tolerance of the Corex-type cells is not required. *Beckman Instruments, Inc., South Pasadena 73, Calif.*

STEAM CLEANING COMPOUND—Used wherever steam or vapor cleaning is carried on, Magnus 72 is unique in that it contains no alkaline salts; thus, it removes a serious hazard common to all steam cleaning compounds containing alkaline materials—the conductivity of their solutions and their residues. It is neutral in reaction and non-corrosive. It generates no objectionable fumes and cannot clog steam cleaning equipment. *Magnus Chemical Co., Inc., South Ave., Garwood, N.J.*

DIAL THERMOMETERS—All stainless steel, dial-type, bi-metallic thermometers are now being produced by a new process for welding thin sections of stainless steel. The thermometers become one sturdy assembly of case, stem and connection nut. Like spot welding, no new metal is added. The stainless steel retains all its corrosion resistance. *Rochester Mfg. Co., Inc., Rochester 10, New York.*

FLUORESCENT ACCESSORIES—A new line of fluorescent materials that literally "glow like fire" under long wave ultra-violet or black light have been designed for use with Blak-Ray tubes and fixtures, as well as with standard black light sources. These materials are especially adaptable for industrial applications requiring inspection markings that will be invisible in ordinary light. *Ultra-Violet Products, Inc., 145 Pasadena Ave., South Pasadena, Calif.*

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The Paper Industry New Literature

Books

PULP AND PAPER, Chemistry and Chemical Technology. Vol. I of "Pulping and Papermaking." By James P. Casey. Published by Interscience Publishers, Inc., 250 Fifth Ave., New York 1, N. Y. 795 pages. 6¼ x 9¼. $15.00.

This book is concerned primarily with the principles of papermaking relating to chemistry. It approaches the study of papermaking raw materials and processes from the standpoint of the colloid and physical chemist. An attempt has been made to present the material in fundamental terms, at the same time bridging the gap between strict theory and extreme empiricism.

Subjects covered in the fifteen chapters of this volume are: cellulose and hemicellulose, lignin, pulpwood, pulping, bleaching, fiber preparation, nature of fiber bonding, sheet formation, filling and loading, internal sizing, surface sizing, wet strength, coloring, microbiology, and water.

CHEMICAL PLANT LIBRARY. James A. Lee, Consulting Editor. Published by McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York, N. Y. 5 volumes. 2359 pages. $24.50.

Prepared by a staff of experts and carefully checked for timeliness and everyday value, all the information contained in these five volumes is clearly indexed for immediate use.

The volume entitled "Selected Process Industries" presents a cross section of the manufacturing procedures employed by modern chemical industries and many manufacturing industries based on important chemical changes, largely separated into unit processes and operations with the aid of flow charts.

"Chemical Engineering For Production Supervision" contains a vast amount of data on transformation of energy, heat transfer, evaporation, distillation, drying, flow of fluids, and absorption. It stresses operation rather than design of equipment.

In the book, "Materials of Construction for Chemical Process Industries," each of 300 different chemicals and foodstuffs is examined as to the manufacturing process, the corrosiveness of the chemical, and the materials of construction used in manufacturing and shipping.

Corrosion factors, physical and mechanical properties of materials, equipment performance factors, and briefs of the theory involved in unit operations common to many chemical processes are discussed in a fourth volume, "Manual for Process Engineering Calculations."

"Chemical Engineering Economics," a book dealing with the business side of chemical engineering, covers the field from an initial analysis of the chemical and allied industries, through research and development . . . to cost systems, and the problems of management.

Over 900 photographs, diagrams, flow sheets, charts, equations, and tables illustrate the data presented.

ACCIDENT PREVENTION MANUAL FOR INDUSTRIAL OPERATIONS, second edition. Published by the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill. 800 pages. $9.00 to members; $18.00 to non-members.

This second edition, which contains 256 more pages and 11 more sections than the first edition, presents practical ways to prevent industrial accidents and fires. Researched and written by Council staff men who are specialists in the fields covered, the manual was then sent to qualified reviewers for comment and analysis.

The book is confined principally to safety in manufacturing and is based on the premise that a major proportion of all accident causes are common to all industry.

Subjects covered include permanent structure and plant layout; maintenance and maintenance crews; boilers; pressure vessels; refrigeration equipment; machine guards; materials handling hazards; hand and portable power tools; welding and cutting; electrical hazards; flammable liquids; fire prevention; fire control; personal protective equipment; industrial health engineering; industrial poisons; medical services in industry; safety organization and training; accident records, and analysis and costs. One of the new sections, "The Safety Man's Resources," is a bibliography of safety organizations and publications.

Reprints of the various sections of the second edition have been bound in paper and may be purchased separately.

PHILLIPS' PAPER TRADE DIRECTORY OF THE WORLD. Published by S. C. Phillips & Co., Graham House, 3 Tudor St., London E.C.4, England. 5¼ x 8¼. 747 pages. £1.17.6, postpaid. (Approximately $3.30).

The 1952 edition brings all previous information up to date. The major part of this directory is devoted to information concerning British paper and pulp mills and converters; however, similar information is included about mills and converters in nearly every papermaking country in the world. All classifications are sub-classified for easy reference to specific details.

Such miscellaneous information as a listing of watermarks claimed by specific firms, glossary of trade terms in six languages, British standard for paper and boards, paper trade customs, etc., are included.

Booklets and Pamphlets

CAUSTIC SODA—PROPERTIES, SOLUTIONS, UNLOADING AND HANDLING. Published by Solvay Technical and Engineering Service, Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y. (Bulletin No. 6). 84 pages. This fourth edition contains many revisions and additions, including new tables, illustrations, and a chart of precautions in handling caustic soda that were not contained in previous editions.

PRINTING MANAGEMENT AT CARNEGIE. Published by the Department of Printing Management, Carnegie Institute of Technology, Pittsburgh, Pa. 18 pages. 12¼ x 9¼. This booklet describes the curriculum in printing management offered at the Carnegie Institute of Technology.

Correction

In the February 1952 issue of THE PAPER INDUSTRY, the booklet ALLOYS IN COOPERLAND was incorrectly titled ALLOYS IN COPPERLAND. The company which publishes this booklet is the Cooper Alloy Foundry Co., not Copper Alloy Foundry Co., as stated. Although the booklet is published at $1.00 for the general public, it is free to those connected with the chemical and allied industries, including the pulp and paper industry.

Manufacturers' Publications

Through the co-operation of manufacturers and suppliers, THE PAPER INDUSTRY lists the following catalogues, bulletins and booklets. They may be obtained without cost or obligation, unless otherwise specified, by writing direct to the manufacturers. Please address requests on your company letterhead.

Blast Heaters. Industrial Manufacturing & Engineering Co., 3845 N. Ravenswood Ave., Chicago 13, Ill.—Industrial heavy-duty blast heaters are described in this 12-page catalogue which includes construction details; a 4-page table giving final temperatures and condensations; a chart for other temperatures and pressures, and tables giving face areas, air friction, and net weights of the various sizes. Also included are a diagram giving dimensions and a typical steam piping diagram.

Leather Belting. Graton & Knight Co., 356 Franklin St., Worcester 4, Mass.—Information contained in this new 40-page catalogue and manual includes the proper belt to use for every installation, how to get longer life from belting, how to make a belt endless, in addition to a listing of sizes, prices and specifications. Charts and tables showing horse power ratings, belt speeds, specifications of controlled tension bases, along with a set of formulas showing the engineer how to figure the belting needs for every job are also given.

Plant Expansion. Alvey Conveyor Mfg. Co., 9301 Olive St. Road, St. Louis 24, Mo.—This 8-page brochure describes Alvey's new manufacturing plant and general offices. A large drawing of the exterior of the plant is included, in addition to many photographs of the interior of the plant and offices. A list

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ups production	simplifies grinding operation
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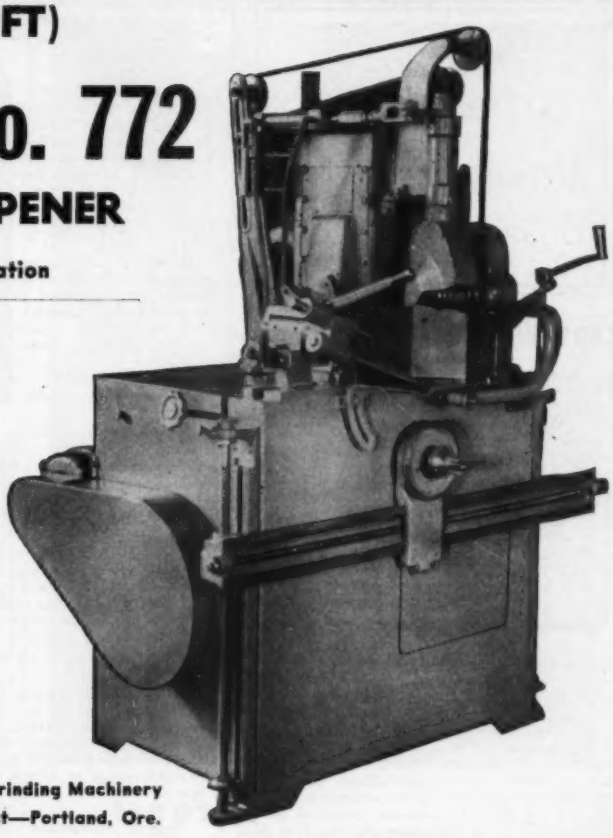

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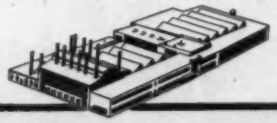
Complete information is yours on request. Or if you like, we'll gladly have an engineer call.



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of their products, where they are used, and in what industries they are used is also given.

Sheet Counter and Marker. Counter and Control Corp., 5225 W. Electric Ave., Milwaukee 14, Wis.—This 4-page bulletin (No. 401) describes three models of the automatic counter and marker: two pedestal mounted portable models and a stationary model. Also described are the 5-count selector box and cyclo-monitor control, used with the above models.

Limit Switches. General Electric Co., Schenectady 5, N. Y.—Three new bulletins covering rotating-type (GEA-5704), lever-type (GEA-5705), and track-type (GEA-5707) limit switches contain descriptive and application information, switch ratings, and a number of photographs and dimension drawings.

Control Instruments. Minneapolis-Honeywell Regulator Co., Brown Instruments Div., Wayne and Windrim Aves., Philadelphia 44, Pa.—This 28-page catalogue (No. 5000) describes the principal instruments, control devices and related components of the Brown line. Specifications of approximately 100 measuring and control instruments, and valves are outlined. Included are several new designs.

Blowers. Read-Standard Corporation, 370 Lexington Ave., New York 17, N. Y.—This 6-page bulletin contains dimensional information of the Standardaire Blower, including: engineering layout, typical application data, important design data, blower number and rating (CFM at listed RPM).

Piping. Power Piping Div., Blaw-Knox Co., 1525 Pennsylvania Ave., Pittsburgh, Pa.—This 95-page catalogue (No. 51) gives data on pipe hangers, vibration eliminators and supports. A technical section is included for the benefit of the piping engineer. Many charts, tables, and diagrams are included.

Drives. The Black-Clawson Co., Hamilton Ohio—Bulletin No. 1-BC, containing 8 pages, illustrates and describes spiral bevel, hypoid, calender reversing, extended shaft, double reduction, and inching gear drives, in addition to airflex and multiple disc clutches.

Process Pumps. Allis-Chalmers Mfg. Co., 991 S. 70th St., Milwaukee, Wis.—Construction features of process pumps for handling corrosive and abrasive liquors are described in a new 6-page bulletin, 08B6615B. Included in the bulletin is an exploded view of the pump and cross sections of each of three stuffing box arrangements.

Blocks and Sheaves. American Hoist & Derrick Co., St. Paul 1, Minn.—A new 24-page catalogue (No. 300-24) describes the complete line of American blocks and sheaves. Information includes block number, capacity in tons, number of sheaves, rope size and weight of each block. Also given is a section on "How to figure line parts," with illustrations, ratio table and formula.

Cellulose Gum. Hercules Powder Co., Wilmington, Del.—Many applications for Hercules CMC (cellulose gum) and its physical and chemical properties are described in this technical booklet, which also contains information on types available, viscosity, compatibility, and other pertinent data. A bibliography lists most of the recently published literature on this chemical.

Color Printing. Dayco M-C Div., Dayton Rubber Co., Dayton 1, Ohio—This folder describes the new Dayco Multi-color system of color printing, giving step-by-step directions. It contains many illustrations in 36 variations of color.

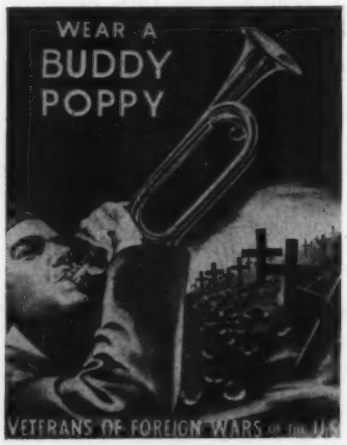
Electric Trucks. Barrett-Cravens Co., 4609 S. Western Blvd., Chicago 9, Ill.—Bulletin 5143 describes the new "Hi-Lift" Power Ox electric trucks, giving full specifications, illustrations and drawings of four compact "walkie" units, designed for lifting, moving and stacking heavy loads.

Speed Drives. Metron Instrument Co., 432 Lincoln St., Denver 9, Colo.—Technical data sheet M1, pages 1 and 2, describes miniature combination fixed and variable speed drives for use in low power applications requiring variable speed at a reduced nominal output speed.

Testing Equipment. General Electric Co., Schenectady 5, N.Y.—This 80-page catalogue (GEC-1016) summarizes all the firm's testing and measuring equipment for laboratory and production line use. The publication contains more than 150 photographs and diagrams and describes the uses, features, specifications and prices of more than 130 GE testing and measuring equipments.

Hydraulic Lift Trucks. Raymond Corp., 8086 Madison St., Greene, N.Y.—All standard models in the firm's complete line are illustrated and described. Complete specifications and explanation are given for each model. The 4-page bulletin (No. 207) describes lift trucks, pallet trucks and high lift trucks.

Grinding. Patterson Foundry & Machine Co., E. Liverpool, Ohio—This 28-page catalogue (No. 514) details Patterson ball, tube and rod mills. Included are more than 50 illustrations, technical descriptions, and charts showing size, weight, linings, ball charge, speed, power requirements, and motor sizes for the various mills.



Fibers. E. I. Du Pont de Nemours & Co., Wilmington, Del.—"This is Du Pont—Man-Made Fibers" is a booklet designed to trace the rise of this new industry, to report on the development of Du Pont's five fibers, and to show the sharp impact of chemical fibers on American living patterns.

Beta Gauges. Tracerlab, 130 High St., Boston 10, Mass.—This 12-page illustrated brochure describes two new model absorption and backscatter beta gauges.

Crane Trucks. Baker Industrial Truck Div., Baker-Raulang Co., 1250 W. 80th St., Cleveland 2—Baker case study 3051 shows how Jones & Laughlin Steel Corp. improved handling and storing systems at its Detroit warehouse.

Chemical Processing Equipment. Read Standard Corp., York, Pa.—This 12-page bulletin, 51759, describes chemical processing equipment and blowers. Photographs, tables, and drawings are included.

Amplifiers. Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne and Windrim Aves., Philadelphia 44, Pa.—22-page Bulletin B15-12 gives a description of the circuit and discusses component characteristics of the amplifier and motor combination of the "Continuous Balance" system. Diagrams and charts are included.

Tubing. The Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.—The many factors affecting tube life in high-pressure, high-temperature applications are presented in a new 40-page illustrated booklet, TR 516.

Check Valves. The Williams Gauge Co., 1620 Pennsylvania Ave., Pittsburgh 33, Pa.—Silent check valves are described and illustrated in a 4-page bulletin, WH-100. Included are technical data, cutaway versions of two types of valves and a series of installation photographs.

Synchronous Motors. Allis-Chalmers Mfg. Co., 991 S. 70th St., Milwaukee 1, Wis.—Standard construction features of low-speed, coupled-type, pedestal-bearing synchronous motors are described in a new 6-page bulletin, 05B7648.

Waterproof Pastes. Rohm & Haas Co., Resinous Products Div., Washington Square, Philadelphia 5, Pa.—These 5-page notes suggest formulations and production techniques for waterproof paste based on starch and Uformite wet-strength resins. Specific recommendations are given for corrugating, solid fibre, and bag pasting.

Spectrometers. Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne and Windrim Aves., Philadelphia 44, Pa.—Instrumentation Data Sheet 10.16-4a describes the application, theory of operation and operating principle features of the Perkin-Elmer mobile infrared spectrometer provided with a high-speed Brown ElectroniK recorder. Photograph of the equipment, plus a schematic diagram of the optical path of the spectrometer are included.

Pumps. Worthington Pump and Machinery Corp., Harrison, N. J.—A new bulletin, W-317-B12, describes wet-pit Freeflo pumps for sump, sewage and drainage service. It includes a cross-section drawing, graph of coverage for 60-cycle motor speeds, dimensions in inches and data on flanges.

Vises. Universal Vise & Tool Co., Parma, Mich.—This 4-page bulletin describes the new Col-Vise which was developed from the original Col-Vise and drill press work holder. Two descriptive tables and many photographs are included.

Thermometers. Henry A. Gardner Laboratory, Inc., 4723 Elm St., Bethesda 14, Md.—This leaflet presents photographs and specifications of the Weston line of thermometers.

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All the way from pattern and core making, clear on through to final inspection, precision is the watch word. Nothing is left to chance.

"K" Fittings are, therefore, sound and true. They make up easily and quickly to form tight joints.

"K's" test high—actually exceed code requirements. They are also Underwriters' Laboratory approved.

Insist upon fittings bearing the "K" trade-mark—first fittings to carry a trade-mark.

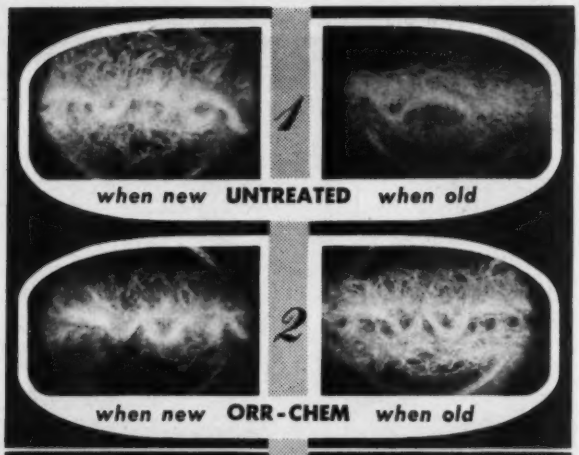
THE KUHNS BROTHERS CO.

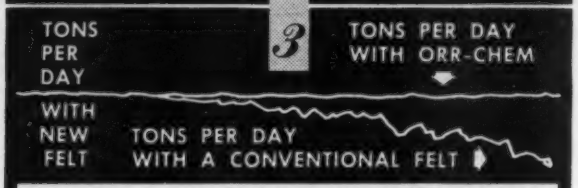
1818 McCALL ST., DAYTON 1, OHIO

Established 1887

K CAST-IRON FITTINGS

3,000 SHAPES AND SIZES





Does your production chart graph a sagging line as the felt gradually becomes compressed in thickness?

Do your felts hold their bulk or do they compress and mat?

There is and should be far more to felt manufacturing than just the weaving of felts from good wool—a fact, that has been effectively demonstrated by the development of the Orr lines of chemically treated felts.

Figure 1 suggests a typical untreated felt that soon became compressed and badly matted. Rapid drop in porosity value.

Figure 2 suggests a like felt chemically treated and highly resistant to compression and matting. Very slow drop in porosity value.

Figure 3 depicts a daily tonnage goal, unobtainable with an untreated felt, but hit "right on the nose" with an Orr-Chem treated felt.

In other words, Orr chemical treatment largely controls the thickness—less compression and less matting—over the entire life of the felt. And, translated into tons and dollars, it also means avoidance of the fast tonnage drop to which mills are accustomed as conventional felts grow old.

Orr-Chem chemically treated felts
An-Bac anti-bacterial felts
standard untreated felts

THE ORR FELT & BLANKET CO.
PIQUA, OHIO

MARKET QUOTATIONS

RAGS (Domestic)

NEW RAGS

The following are OPS ceiling prices, cents per pound, delivered mills:

	per cwt.
Blue Overalls	14.50
Corduroy	8.00
Washables, No. 1	6.50
Percales	12.50
Light Prints, No. 1	11.50
Khaki Cuttings—	
Sun Tan	11.50
Mixed	8.00
New White Canvas	19.00
Canton Flannels, bleached	21.00
Canton Flannels, unbleached	21.00
Shirt Cuttings—	
New White No. 1	21.00
Silesias No. 1	16.00
New Unbleached	21.00
Fancy	10.00
Linen Cuttings—	
American	14.50
White	21.00
Grey	21.00

RAGS (Domestic)

OLD RAGS

Quotations to consuming mills, dollars per hundred pounds, f.o.b. New York, follow:

	per cwt.		
Roofing—			
No. 1	1.50	to	1.60
No. 2	1.00	to	1.10
No. 3 and 4	.85	to	.95
Twos and Blues—			
Repacked	3.75	to	4.00
Thirds and Blues—			
Repacked	3.25	to	3.50
Miscellaneous	2.75	to	3.00
Whites, No. 1—			
Repacked	6.75	to	7.00
Miscellaneous	5.75	to	6.00
White, No. 2—			
Repacked	5.50	to	5.75
Miscellaneous	4.75	to	5.00

RAGS (Foreign)

ex dock New York City

NEW RAGS

	per cwt.
New Dark Cuttings	Nominal
New Mixed Cuttings	
New Light Silesias	
Light Flannelettes	
Unbleached Cuttings	
New White Cuttings	
New Light Oxfords	
New Light Prints	

RAGS (Foreign)

ex dock New York City

OLD RAGS

	per cwt.
No. 1 White Linens	Nominal
No. 2 White Linens	
No. 3 White Linens	
No. 4 White Linens	
No. 1 White Cottons	
No. 2 White Cottons	
No. 3 White Cottons	
No. 4 White Cottons	
Extra Light Prints	
Ord. Light Prints	
Med. Light Prints	
Dutch Blue Cottons	
French Blue Cottons	
French Blue Linens	
Checks and Blues	
Linsey Garments	
Dark Cottons	
Old Shopperies	

ROPE and BAGGING

f.o.b. and ex dock New York City

	per cwt.		
Gunny No. 1—			
Foreign	6.75	to	7.00
Domestic	7.00	to	7.25
Wool Tares—			
Light	8.50	to	9.00
Heavy	9.00	to	9.50
No. 1 Scrap Bagging	6.25	to	6.75
Manila Rope—			
No. 1 large	9.75	to	10.00
No. 1 small	8.75	to	9.00
Sisal Rope—			
No. 1 large	8.00	to	8.50
No. 1 small	7.50	to	7.75
New Burlap Cuttings	8.00	to	8.50
Jute Threads—			
Foreign (Nom.)	8.00	to	8.50
Domestic	8.00	to	8.50
Strings—			
No. 1 sisal	6.00	to	6.50
No. 2 sisal	5.50	to	5.75
Soft jute	5.75	to	6.00
Mixed	4.00	to	4.25

WASTE PAPER

The following are quotations, dollars per ton, for No. 1 packing f.o.b. New York:

	per ton		
Shavings—			
Hard White Env. Cuts	140.00	to	150.00
Hard White, No. 1	115.00	to	120.00
Soft White, one-cut	100.00	to	110.00
Soft White, No. 1	90.00	to	95.00
Soft White, Misc	70.00	to	75.00
Fly Leaf, No. 1	40.00	to	45.00
Fly Leaf, Woody No. 1	35.00	to	40.00
No. 2 Mixed Col. Woody	30.00	to	35.00
Flat Stock—			
No. 1 Heavy Books and Magazines, Repacked	36.00	to	38.00
Mixed Books	24.00	to	25.00
Ledger Stock—			
No. 1 White	75.00	to	80.00
No. 1 Mixed (Colored)	55.00	to	60.00
Manilas—			
New Env. Cuttings	95.00	to	100.00
New Env. Cuts, One-Cut	—		
Extra Manilas	45.00	to	50.00
Manila Tab Cards, Free of Ground Wood	85.00	to	90.00
Colored Tab Cards	60.00	to	65.00
Kraft—			
New Envelope Cuttings	80.00	to	85.00
Tripled Sorted No. 1 100%	43.00	to	45.00
No. 1 Old Assorted	27.50	to	30.00
News—			
White Blank	65.00	to	70.00
Overissue	17.00—		
No. 1 Folded	11.00—		
Old Corrugated Containers	13.00—		
New Jute Corrugated Cuts	18.00—		
Mill Wrappers	10.00—		
Box Board Chips	9.00—		
No. 1 Mixed Paper	7.00—		

CHEMICALS

f.o.b. shipping point

Alum (Papermakers)—			
Lump, cwt.	4.55—		
Ground, cwt.	4.30—		
Powdered, cwt.	4.70—		
Blanc Fixe—			
Pulp, bulk, ton	90.00—		
Dry, barrels	95.00—		
Bleaching Powder—			
Drums, cwt.	5.00	to	6.00
Casein (Domestic Standard)			
20-30 mesh (bags), lb.			
80-100 mesh (bags), lb.	27.50—		
Argentine, lb.	23.00—		
China Clay—			
Domestic Filler Bulk (mine) ton	10.00	to	15.00
Domestic Coating Bulk (mine) ton	15.00	to	25.00
Imported (ship side) Bulk (lump) ton	22.00	to	30.00
Chlorine—			
Tanks cars (wks) cwt.	2.70—		
Gelatine (silicin), lb.	1.25	to	1.35
Glue, (C.P.) drums, lb.	54.25	to	54.75
Litharge, powd. bbl. lb.	20.65	to	21.65
Rosin (Gum)—	New York, per 100 lbs.		
E	8.50—		
F	8.50—		
G	8.50—		
WW	8.90—		
Rosin (Wood), carlots,			
F.O.B. South	4.90	to	5.00
Salt Cake—			
Dom. bulk (wks) ton	17.00	to	23.00
Imp. bulks on dock— (Atl. ports) ton (Nom.)	25.00—		

MARKET QUOTATIONS

Soda Ash—
Bulk (works) cwt. 1.20—
Paper bags, cwt. 1.60—

Soda (Caustic)—
Solid drums, cwt. 3.35 to 3.40
Ground and flake, drums, cwt. 3.75 to 3.85

Sodium Silicate—
60 deg. 55 gal. drums, (works) cwt. 1.70 to 1.80
40 deg. 35 gal. drums, (works), cwt. 1.40 to 1.50

Starch—
Pearl, 140 lb. bags, cwt. 6.44—
Pearl, barrels, cwt. 6.44—
Paper (Sp.) bags, cwt... 6.44—
Powdered, barrels, cwt... 6.65—

Sulphur (Crude)
(Mine) bulk, long ton.... 21.00 to 22.00

Talc—
Dom. 100 lb. bags (mine) ton 25.00 to 28.00
Canadian 35.00 to 45.00

Titanium Dioxide—
Barium Pig, bbls., lb.... .21 to .21½
Calcium Pig, bbls., lb.... .21 to .21½
Zinc Sulphide, bbls., lb.... 11.50 to 11.75

WOOD PULP

The following are OPS ceiling prices on domestic wood pulp, dollars per short air dry ton delivered consuming mills including the basic maximum freight allowances as provided:

Bleached sulphite .....140.00—
Unbleached sulphite .....132.50—
Bleached sulphate .....145.00—
Semi-bleached sulphate .....140.00—
Unbleached sulphate 132.50
Bleached soda .....140.00—
Ground wood .....92.50—
Sulphite screenings .....72.50—
Sulphate screenings .....67.50—
Ground wood screenings.....60.00—
Unbleached sulphate siderums .....132.50—
Standard news print siderum .....92.50—

OPS ceiling prices on European wood pulp, dollars per short air dry ton, on dock at American Atlantic ports, follow:

Bleached sulphite .....225.00—
Bleached sulphate .....230.00—
Unbleached sulphite .....200.00—
Unbleached sulphate .....200.00—

PAPER

Boards—
OPS ceiling prices (CPR 108) per ton, delivered consumer's mill, 10 tons or more:
Plain chip.....105.00—
News vat lined chip.....107.50—
Filled news.....110.00—
Solid news.....112.50—
White vat lined chip.....142.50—
Chip tube and can stock....110.00—
Single manila lined chip....147.50—
Single jute lined chip.....145.00—
White patent coated:
.020 .....175.00—
.018 .....177.50—
.016 .....180.00—

Book Paper—
OPS ceiling prices (CPR 106) per cwt.:

Coated two sides

70 lb. No. 2 enamel, 25x38-500, trimmed 4 sides....	4 cases	$17.25
	Carloads	$16.30
42 lb. enamel, 25x38-500, trimmed 4 sides.....	4 cases	$13.05
	Carloads	$12.10

Uncoated

55 lb. No. 2 offset, 25x38-500, trimmed 4 sides.....	4 cases	$14.80
	Carloads	$13.85
50 lb. A Grade English Finish, 25x38-500, untrimmed	4 cases	$14.05
	Carloads	$13.10
30 lb. envelope, 17x22-500, untrimmed	Carloads	$12.40
16 lb. tablet, 17x22-500	Carloads	$11.35

Rag Content Bond—
OPS ceiling prices (CPR 91) per cwt., f.o.b. mill:

	17 lbs. or heavier	16 lbs.
Extra 100% rag	57.50	58.50
100% rag.....	49.50	50.50
75% rag.....	38.00	39.00
50% rag.....	29.50	30.50
25% rag.....	24.00	25.00

Rag Content Ledger—
OPS ceiling prices (CPR 91) per cwt., f.o.b. mill:

Extra 100% rag.....	58.50
100% rag.....	50.50
85% rag.....	42.00
75% rag.....	39.50
50% rag.....	30.50
25% rag.....	25.00

Sulphite Bond—
OPS ceiling prices (CPR 91) per cwt., f.o.b. mill:

	17 lbs. or heavier	16 lbs.
Air dry bond (Watermarked)	20.00	21.00
No. 1 bond (M.F. watermarked)	15.50	16.20
No. 2 bond (M.F. watermarked)	14.90	15.60
Plain bond (M.F. unwatermarked)	14.00	14.60

Sulphite Ledger—
OPS ceiling prices (CPR 91) per cwt., f.o.b. mill:

No. 1. M.F. watermarked.....	16.50
No. 2. M.F. watermarked.....	15.90
Plain, M.F. unwatermarked.....	15.00

Glassine (f.o.b. mill)—
OPS base ceilings (CPR 76): per cwt.
25 lb. base No. 1 bleached glassine ..... 22.50—
25 lb. base No. 1 bleached greaseproof ..... 20.00—

News— per ton
Rolls, Standard (Contract) .....116.00—
Rolls (Spot)..... (Nominal)
Sheets .....130.00—

Tissues (Carlots)— per ream
White No. 1..... 2.25—
White No. 2..... 1.75—
Bleached Anti-Tarnish.... —
Colored ..... 2.20—
Anti-Tarnish Kraft ..... 2.10—
Manila ..... 2.20—
Napkins, semi-crepe (12½ lb. to M shts.) per cs..... .90—
Napkins, full crepe and embossed (12½ lb. to M shts.) per cs..... .90—
Toilet, Bleached (M shts.) per cs..... 10.00—
Toilet, Unbleached (M shts.) per cs..... 8.00—

Towels per case
Bleached ..... 6.80—
Unbleached ..... 5.90—

Wrappings (Kraft)—
OPS ceilings, per cwt., 50 lb. base weight: per cwt.
Standard wrapping ..... 7.75—
Butchers, counter rolls..... 9.25—
Standard bag, mill rolls.... 7.50—
Shipping sack, mill rolls.... 7.75—
Gumming, mill rolls..... 8.00—
Asphalting, mill rolls..... 7.75—
Envelope, mill rolls..... 9.25—

Wrappings (Sulphite and Bleached Kraft)—
(Rolls, f.o.b. mill)

Bleached Papers— per cwt.
M.F. & M.G. Waxing, 20 lb. (carloads only) —
(10,000 lb.)..... —
Drug wrapp., 35 lb... —

Unbleached Papers
Com. Gr. Butch. 40 lb.
No. 1 Butchers..... —
No. 1 Imit. Parch. & Dry Fin. Groc. Sulphite, 30 lb..... —
No. 2 Imit. Parch. & Dry Fin. Groc. Sulphite, 30 lb..... —
Steam Finish, 50 lb... —
Water Finish, 50 lb... —

Manilas—
Envp. Mla., Sub. 16-40 (No. 1)..... —
Env. Mla., Sub. 16-28 (No. 2)..... —
Envp. Mla. (Prices based on large sheets untrimmed ream marked, in bdls.)..... —

Wrapp. Mla. 35 lb. up—
No. 1..... —
No. 2..... —

M.G. Sulphite and Kraft (other than Waxing)
Grade B-30 lb..... —
Grade A-22 lb..... —

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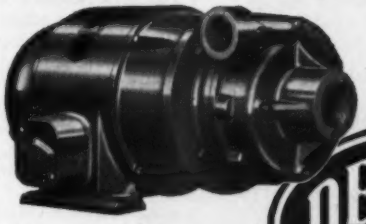

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Up to 5500 gpm integral hp sizes
Up to 90 ft. fractional hp sizes
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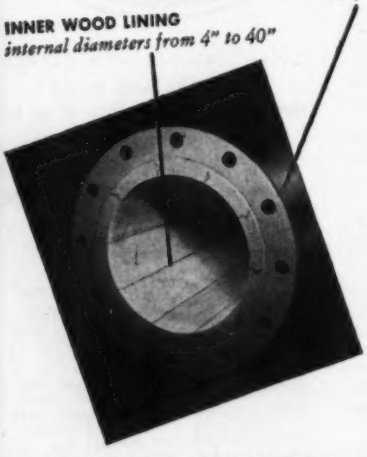

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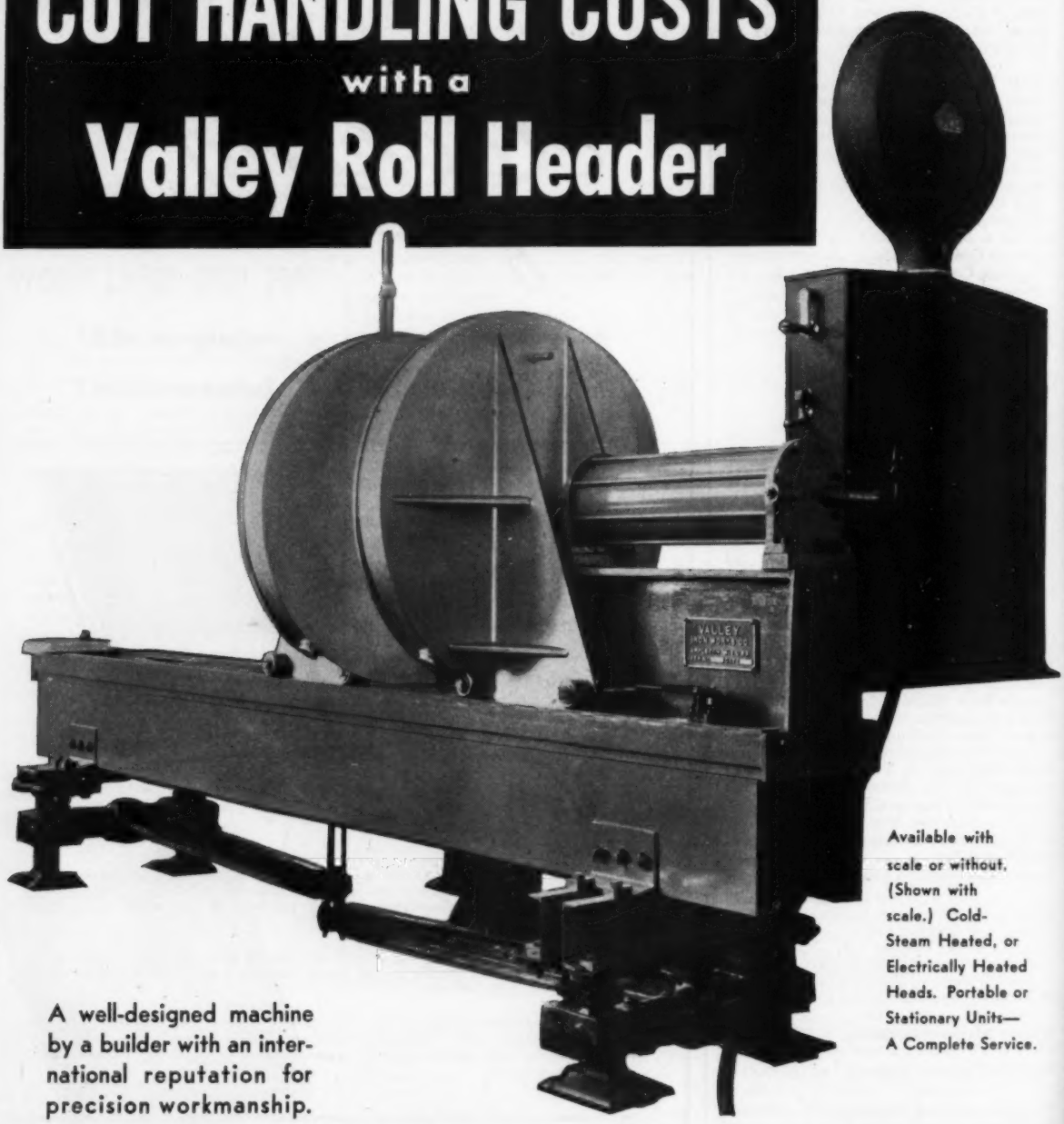

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